

TECHNICAL ANALYSIS

Last Revised - February 14, 1996

NEVADA ELECTRIC INVESTMENT COMPANY (NEICO) WELLINGTON PREP PLANT ACT/007/012

INTRODUCTION

The Operation and Reclamation Plan (ORP) has been modified several times to arrive at a document which nearly resolves issues and deficiencies identified in the Permit Stipulations issued on December 12, 1994. Although the ORP still contains areas of deficiencies the document has advanced to a point where it is necessary to incorporate applicable portions of those responses. A meeting was held with Sharon Falvey of the Division and Patric Collins of Mount NEBO Scientific, a consultant representing Nevada Electric Investment Company. The meeting identified the information to be incorporated included portions of the November 10, 1994; and June 5, 1995 amendments to the stipulation response; and the November 6 1995 submittal which addresses Notice of Violation 95-39-2-2. It should be noted that the November 10, 1994 amendment included some bonding information which has been superseded by Amendment 95-F approved on August 31, 1995. This Technical Analysis also includes updates to the TA as a result of the approved Topsoil Borrow Area Amendment, submitted June 30, 1995, and addendum submitted October 13, 1995.

This and earlier stipulation response submittals include changes to the plan which should be noted. Site changes include; reconstruction of the permanent diversion above the Siaperas Ditch to fill in the in channel pond; reconstruction of the slurry pipeline ditches; and a commitment to install additional water monitoring wells.

SUMMARY OF OUTSTANDING DEFICIENCIES

1. *The Permittee must provide the following in accordance with the requirements of:*
R645-301-521, a description of the estimated life of operations, the size, and the sequence and timing of operation and reclamation activities. This section should be updated to reflect current proposed operation activities.
2. *R645-301.321, modification of the statements which indicate that the riparian areas were not disturbed to a statement providing an accurate description of the riparian area as required by R345-301-310 and R645-301-322-220.*
3. *The Permittee must provide the following, in accordance with the requirements of:*
R645-301-120, a premining land use description which is consistent with the findings of the premining land use identified in the original permit decision package or,

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provide an amendment demonstrating the premining land use was incorrectly determined. Premining land uses are determined to be those uses that were properly managed and those uses which the land previously supported prior to mining.

4. *The Permittee must do the following in accordance with the requirements of:*

R645-301-725.100-3, *develop and incorporate into the plan locations and construction characteristics for the proposed monitoring wells. The well locations must be added to the water monitoring map to meet the requirements of R645-301-725.100. Proposed locations should be approved by a Division Hydrologist prior to drilling. Clarify how the new proposed well location and monitoring scheme will be used in assessing the water quality characteristics as it relates to contributions from the sources referred to including: contact with the Mancos Shale; down gradient irrigation water characteristics; and the Slurry Cells. Rather than replace existing Wells GW-3 and GW-6, the Permittee should replace GW-2 which does not "represent alluvial water quality " and is not "representative of current conditions" (response memo June 5, 1995); retain Well GW-6 which supplies useful information on water quality for slurry groundwater potentially mixed with the alluvial river water; and remove and properly abandon GW-5 which is dry; and does not provide information for the proposed operations.*

R645-301-130, *provide the Division with a copy of the lab results from the track hopper data, obtained on April 30, 1994.*

R645-301-728.200, *provide adequate data analysis to support the conclusions made for the slurry cells. Appropriately compare and analyze data relative to climate; changes in operations, and waters monitored in the wells, appropriately compare well water data according to the monitored water source (see discussions under analysis). Separate analysis of data obtained from GW-2 and other wells developed in the Bluegate Shale, and for wells influenced by the Price River, with the wells in alluvial waters which bias what affect the slurry cell may have on the alluvial waters downstream of the cells. Clarify the discussions in the PAP to reflect the discussions in the June 5, 1995 Response Memo, pages 1 of 8 through page 8 of 8, under the following headings: R645-301-621 Geologic Information, R645-301-725.100-3 Hydrologic Resource Information, R645-301-728.200 Probable Hydrologic Consequences and R645-301-730 .*

R645-301-731.211, *adjust the text to clearly commit to sample SW-2 and GW-6; and at SW-4 and GW-2 and GW-3, and SW-1 on the same day, in order to provide water monitoring that aids in a determination of the Hydrologic Impacts. The monitoring of surface water and groundwater to be taken on the same day is necessary to determine natural variations vs. influences from the operations.*

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5. *The Permittee must provide the following in accordance with the requirements of:*

R645-103-234.100, the necessary approvals (with signatures) for each road clearly specifying which roads are approved (for mining operations within 100 feet of the right-of-way) by the authority with jurisdiction over the public road.

R645-301-120, clarification for the existing public roads and a description in the text of the MRP. All public roads, including the road between the tailings pond and the Price River, must be presented clearly on a map (Exhibit E9-3341).

R645-301-526.116, a description of the measures to be used to assure the public and land owner interests are upheld for all affected county roads which are within 100 feet of mining and reclamation activities. Each applicable road should be specifically addressed.

6. *The Permittee must provide the following in accordance with the requirements of:*

R645-301-515, the commitments for slides and other damage as required by this regulation.

7. *The Permittee must accomplish the following in accordance with the requirements of:*

R645-301-120, clarify the statement in Section 5.21 which states " ...most of the rail system is outside of the permit area". Correctly reference the exhibit showing the railroad right of way. Provide the correct reference or provide the referenced documentation (easement agreement with the Denver and Rio Grande Western Railroad attached to Appendix J)for the railroad right of way.

8. *The Permittee must provide the following, in accordance with the requirements of:*

R645-301-746.212, a demonstration that the permanent Plant Refuse Pile meets the drainage requirements for the 100 year 6 hour event for the permanent configuration of the pile.

R645-301-514.200, a commitment to conduct regular inspections of compaction of coal mining waste. By definition sediment pond waste is considered coal mining waste.

R645-301-536, certified designs as required by R645-301-512.230.

R645-301-745.200, a copy of the approval letter to clarify the status of the Coarse Slurry Refuse Pile with MSHA. The Permittee considers this as a part of the refuse basin impoundment, however a separate existing MSHA number as a refuse pile exists for this structure Any additional use of this pile as a refuse pile may require re-permitting according to both MSHA and State regulatory requirements.

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9(A). *In order to be in compliance with this section the following must be done in accordance with the requirements of:*

R645-301-732.225, *appropriately cap well GW-2, or provide measures for proper abandonment.*

R645-301-722.300, *Identify the location of all NPDES discharge points on the water monitoring maps.*

R645-301-731 and R645-301-728.335. *Monitoring of SW-4 should be moved near to GW-3 and be monitored at the same time to assist in determining effects of dilution or evaporation on water quality at GW-3. If flow is obtained at SW- 4 during an event, then data from SW-3 would be of importance to the operator and should be sampled. SW-3 should be moved and located just above the slurry cells in the Permanent Diversion Ditch. A commitment to submit all field data to the Division and a commitment to provide actual flow measurements must be clearly incorporated into the plan. Collection of "same day" surface and groundwater samples at stations SW-2 and GW-6, SW-4 and GW-2 and GW-3 should be committed to. GW2 and GW-5 should be removed and GW-6 should be retained.*

R645-301-750, R645-301-751, R645-301-730, *describe the existing site characteristics for Boron, Selenium, and leachable salts.*

R645-301-740, *designs and discussion of drainage ditches DD-1 through DD-3 as shown in the "as built" facilities map were not located in the plan and should be provided. The culvert designs for C2, C-4, C-6, C-7, C-10, C-11, C-12 could not be located in the plan and also need to be provided.*

9(B). *The Permittee must demonstrate the pond meets the requirements of the R645-301-740 and R645-301-760 by doing the following:*

- a. *Providing complete site grading as presented in E9-3342 prior to removal of the Auxiliary Pond or provide site specific information including proposed elevations and cross sections for the inlet and surface elevations prior to Auxiliary Pond removal.*
- b. *Providing a certified map for revisions of June 1995 A signed certified copy is necessary.*

10. *Prior to reclamation and approval of the changes in postmining land use the Permittee must provide the following in accordance with the requirements of:*

R645-301-414, *provide an amendment for the proposed change in postmining land use or maintain the approved postmining land use.*

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11. *The Permittee must provide the following, in accordance with the requirements of:*

R645-301-342, *commit to reclaim the area to the premining land use and include a plan for practical wildlife habitat enhancement measures using the best technology currently available (following approval, the permittee can consider alternative land uses and how habitat enhancement measures can be incorporated into these land uses).*

12. *Prior to completing grading and reclamation at the slurry cells the applicant must provide the following:*

R645-301-542.400, *a discussion on how the factor of safety for this site may change as a result of the reclamation plan and demonstrate that the site meets requirements for a permanent coal mine waste disposal facility (slurry impoundment) including MSHA requirements.*

13. *The Permittee must provide the following, in accordance with the requirements of:*

R645-301-762.200, *The drainage area previously called Reach-1 is now proposed for grading to blend with the surroundings. The drainage from this area must be graded such that water is not ponding at the toe of the refuse pile and so that water drains to the culverts retained as part of the railroad utility. The applicant should provide a discussion, drainage direction (using arrows to indicate flow) and demonstration showing the 100 year - 6 hour event will drain from the regraded area and will not pond at the toe of the refuse pile.*

14. *The Permittee must provide the following, in accordance with the requirements of:*

R645-301-352, *plans and time schedules for contemporaneously reclaiming those areas of the site that are no longer being used to support the operation.*

15. *The Permittee must provide the following, in accordance with the requirements of:*

R645-301-341:

- a) *a commitment to a water harvesting, irrigation, or other method for the coarse refuse pile.*
- b) *information from the NRCS evaluations for the reference areas in the plan.*
- c) *specific diversity and seasonality revegetation success standards.*

16. *The Permittee must provide the following in accordance with;*

R645-301-356.100, *a standard by which to measure the success of reclamation efforts in order to determine how the requirements of R645-301.353.140 will be met to control or prevent erosion.*

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17. *The Permittee must provide the following, in accordance with the requirements of:*
R645-301-515.300, a description of procedures for temporary cessation of operations.
18. *The permittee must either dispose of the asbestos or provide the following in accordance with R645-301-830.140:*
A detailed cost estimate with supporting calculations which will allow the Division to determine the adequacy of the bond with regard to the disposal of asbestos.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

GENERAL

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The Wellington Preparation Plant facility started operations in 1958 prior to the enactment of SMCRA. Therefore, no baseline information was gathered from most of the undisturbed areas prior to mining disturbance. The primary vegetative communities which existed prior to disturbance are shadscale-galleta, black sagebrush-galleta, and greasewood-alkali seepweed. Nearly pure stands of Indian ricegrass or mat saltbush are in the area, but they are fairly small isolated patches. Information on woody species density, vegetative cover by species, and production are presented in Tables 2-1, and in Section 4.11.

The fish species of interest in the Price River are channel catfish and speckled dace, a protected species. The Price River is ranked as having limited value to the fishery management program while the riparian area is ranked as having critical value to local wildlife populations. Numerous birds and mammals inhabit the general area of the plant. There are habitat areas of high, substantial, and limited value for several species, but the only critical habitats are farmland and the riparian area along the Price River. There are no listed endangered or threatened species known to occur within the permit area, but some endangered and threatened fish exist in the Colorado and Green Rivers.

The Wellington Preparation Plant is located in the Colorado Plateau Physiographic Province along the Price River southwest of Wellington, Utah. The permit area lies within the drainage basin of the Price River, tributary to the Green River and ultimately the Colorado River. The drainage area for the Price River upstream of the plant is approximately 950 square miles. The Wellington Preparation facilities are situated upon the Price River Flood Plain alluvial deposits developed over the Blue Gate Shale member of the Mancos Shale. The area soils were derived from Colluvial and Fluvial processes. Currently fluvial processes are evidenced by terracing and deposition along the Price River. This site has a mesic temperature regime and aridic and torric moisture regimes.

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Groundwater resources in the permit area consists of the Ferron Sandstone and shallow alluvial waters. The Blue Gate Shale Member serves as a confining layer below the alluvial groundwater system. The Ferron Sandstone formation also located in the permit area, consists of very fine sandstone and siltstone and is approximately 400 to 450 feet below the surface in the Wellington area. It is considered to be hydrologically disconnected from the sandstone units which produce water from wells near the city of Emery. When reviewing well logs provided by the Department of Water Rights for wells near the permit area no wells were determined to be completed in the Ferron Sandstone. No springs or seeps were identified in the permit area although one spring is known to exist in the adjacent area. This spring issues from alluvium along the Price River two miles northeast of the facilities.

Findings:

The applicant has provided general information to describe the pre-mining environmental resources within the permit area and adjacent area.

PERMIT AREA

Regulatory Requirements: 30 CFR Sec. 783.12; R645-301-521.

Analysis:

The Wellington Preparation Processing Plant began operations in 1958. Slurry operations lasted through 1984 when the load out idled. In 1986 a sewage treatment plant was constructed near the northwest corner of the property.

The Permittee has estimated the life of operations at the Preparation Plant to be more than 30 years. Size, sequence and timing of reclamation was not discussed further since, the Permittee intends to transfer the operations to another entity. There is a potential that second mining may occur from the Slurry Cells.

Findings:

The Permittee should provide estimated life of operations, size, sequence and timing of operation and reclamation activities. This section should be updated to reflect current proposed operation activities.

The Permittee must provide the following in accordance with the requirements of:

R645-301-521, a description of the estimated life of operations, the size, and the sequence and timing of operation and reclamation activities. This section should be updated to reflect current proposed operation activities.

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HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411.

Analysis:

There are no known cultural and historic resources or archeological sites in the immediate area. The PAP states "the application was found in compliance with the National Historic Preservation Act by the Utah Historic Preservation Office, December 6, 1982". There are no public parks or cemeteries within a hundred feet of the permit area. There are no lands in the permit area within a unit of "National System of Trails" or within the "Wild and Scenic Rivers System or Study Areas".

The Division's permit document records agree with the statement in the PAP. An apparent completeness review was completed on December 6, 1982, which did not require any additional request for information. However, no document could be found from the Utah Historic Preservation Office for the referenced date. Existing Division document records from the Utah Historic Preservation Office did include; a letter dated September 24, 1981 which indicated the Division of State History was in agreement with the mine plan "it is unlikely that there are any cultural sites in the area or any that would be affected by the development of the Wellington Preparation Plant"; and a January 19, 1984 memo stated "the negative report submitted would appear to comply with any OSM regulations for cultural resource management".

Findings:

The PAP was found to meet the requirements of this section in the State Decision Document on August 22, 1984. The approval is based on the Division of State History documents dated September 24, 1981 and January 19, 1984.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.18; R645-301-724.

Analysis:

The PAP provides climatological information in Section 7.24.4 reporting an average annual temperature of 49.4°F, an average warm season temperature of 63.9°F and, an average cold season temperature of 34.9°F. The average annual precipitation is presented as 9.59 inches. (Other portions of the plan refer to the annual precipitation as averaging 8 inches). The average direction and velocity of prevailing winds was not addressed in this section.

The Permittee has met the minimum requirements for climatologic resource data. Additional on-site precipitation data may be necessary during the reclamation phase to

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determine irrigation rates, and for assessing water quality data at the slurry cells if irrigation is proposed.

Findings:

The Division finds the PAP meets the minimum requirements for climatologic resource data at this time.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.19; R645-301-320.

Analysis:

There are three major plant communities assumed to have been affected by the Wellington Preparation Plant. These are shown on Map F9-178 and F9-179. Communities on the rolling hills are predominantly shadscale/galleta with some black sage/galleta. Drainage and valley areas probably supported a greasewood/seepweed community. There are small areas of nearly pure stands of Indian ricegrass and mat saltbush. Revegetation reference areas are in shadscale/galleta and greasewood/seepweed vegetation types. The plant communities were evaluated in 1983.

There is a small portion of the riparian community near the Price River that was disturbed through coal operations. Based on a field visit, it appears that less than one acre of riparian vegetation was disturbed. Therefore, the plan does not contain vegetation information or a separate revegetation success standard for this area. However, it does contain a revegetation plan to enhance the wildlife habitat value.

Section 3.11 and 3.33 contain statements that the riparian community was not disturbed. These statements should be modified.

Total living cover in the shadscale/galleta community was 35.00% of which 43.25%, 43.25%, and 13.65% was provided from shrubs, grasses and forbs, respectively. (The reason these figures do not add up to 100% is not known.) Shadscale, galleta, and desert plantain were the most common shrub, grass, and forb respectively. Shadscale made up about one-third of the total vegetative cover and galleta about one-fourth. Woody plant density was 3484 per acre. Total annual production was 239 pounds per acre. Range condition was rated by the Soil Conservation Service as fair.

Living cover in the greasewood/seepweed community was 76.67% and consisted entirely of shrubs. Woody plant density was 3964 per acre, and production was estimated to be 729 pounds per acre. Dominant plants were greasewood and Torrey seepweed. The Soil Conservation Service rated the range condition as poor.

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Findings:

Statements in the plan indicating that the riparian areas were not disturbed need to be modified. The Permittee must accomplish the following, in accordance with the requirements of:

R645-301.321, modify the statements in the plan which indicate that the riparian areas were not disturbed to a statement providing an accurate description of the riparian area as required by **R345-301-310** and **R645-301-322-220**.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21; R645-301-322.

Analysis:

Fish and wildlife information is found in Section 3.11. The Wellington Preparation Plant permit area is dominated by the shadscale and greasewood communities of the Upper Sonoran Life Zone. This life zone provides potential habitat for 246 vertebrate species of wildlife, including five fish, six amphibian, 15 reptile, 176 bird, and 44 mammal species. However, wildlife populations are generally considered low on the permit area. The plan includes a low-level study of wildlife within and adjacent to the permit area. This study was performed by Wildlife Resources.

The Price River is ranked as having limited value to the fishery management program. It supports one fish species of high interest, the channel catfish, and one other protected species, speckled dace. The riparian area is ranked as having critical value to local wildlife populations.

In 1983, surveys were made for threatened or endangered plant and animal species. No threatened or endangered species were observed. The permit area is within the ranges of several raptor species, but it does not contain suitable nesting habitat. Wintering bald eagle populations in the Price area have been increasing, but there are no known high-priority concentration areas or critical roost trees. Contrary to the information in the Wildlife Resources report, there are now at least three bald eagle aeries known for Utah.

Although the plan has little site-specific information, it is considered adequate to design the protection and enhancement plan required by R645-301-330.

Findings:

The wildlife information in the plan is adequate to design the protection and enhancement plan required by R645-301-330 and fulfills the requirements of R645-301-322.

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SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c); R645-301-411, -301-233.

Analysis:

Soils information for the Wellington Preparation Plant are primarily derived from the SCS Carbon County Soil Survey. Other information was gathered from on site soil pedon description at Topsoil Borrow Area "A" sample sites NEICO 1 through 7 and is discussed further under the "Topsoil and Subsoil" heading in this TA. Area Soils are fine-silty, mixed (calcareous), mixed Typic Torrifluvents (Billings series); mesic Typic Torrifluvents (Ravola series); and fine-silty, mixed (calcareous), mesic Augic Ustifluvents (Hunting series). Soils at this site were disturbed prior to the enactment of SMACRA. Typical pedon descriptions provided are not located within the current 392 acre disturbed area.

Map G9-3510 illustrates the following map units within the permit area: #35, Gerst-Badland-Stormitt Complex; #41, Green River-Juva Variant Map Complex; #55, Hunting Loam; #58 Juva Variant, fine sandy loam; #80, Persayo-Chipeta Complex; #93, Ravola-Slickspots complex; #94, Riverwash. The text defines the dominant soils as Gerst, Juva Variant, and Ravola loam. Site specific pedon information indicate the Carbon County soil service map in the vicinity of NEICO 1 should be changed to Map Unit #90 (Ravola silty clay loam, 1 to 3% slopes) and in the vicinity of NEICO 2, 3, and 4 be identified as Map unit #8 (Billings silty clay loam, 1 to 3% slopes).

#8 Billings Silty Clay Loam: Map unit #8 has a productivity potential of 300 to 700 lb/acre, is in a Desert Loam rangesite and supports a shadscale/galleta community. From 31 to a 60 inch depth or more the clay loam is strongly saline. Permeability is low. Runoff is medium and erosion hazard is moderate. The soil capability unit is IIIe, irrigated, and subclass VIIs non-irrigated.

#35 Gerst-Badland-Stormitt: This soil unit is 55% Gerst cobbly loam, 20% Badland, 15% Stormitt gravelly sandy clay loam, and 10% other soils. The map unit has a productivity potential of 300 to 600 lb/acre, in a Wyoming Big Sagebrush rangesite. Most current area vegetation is; black sagebrush, galleta, Indian rice grass, blue gramma, shadscale, yellow brush, and bottlebrush squirtail in the Gerst soils; and galleta, blue gramma, Wyoming big sagebrush, Salina wildrye, yellowbrush, and shadscale in the Stormitt soil. Badlands are nearly barren. Permeability ranges from moderately slow, rapid to very rapid, and moderate; respectively for the Gerst, Badland and Stormitt soils. Runoff varies from medium, rapid to very rapid, and rapid, respectively for the Gerst, Badland and Stormitt soils. And Erosion is moderate, geologically active, and high for the Gerst, Badland and Stormitt soils, respectively.

#41 Green River-Juva Variant Complex: This unit is 45% Green River silt loam, 30% Juva Variant fine sandy loam, and 25% other soils. Map unit #41 has a productivity potential of 1,000 to 2000 lb/acre, for the Green River Soil, in a Wet Salt Streambank rangesite. The current vegetation is mainly tamarisk, willows, saltgrass, sedges, and

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cottonwood. Green River soil is very deep and moderately well drained. Permeability is moderate. Runoff is slow and water erosion hazard is slight. The seasonal water table fluctuates from 24 to 36 inches and is subject to flooding. See #58 Juva Variant for further description of this soil unit .

#55 Hunting Loam: Map unit #55 has very deep somewhat poorly drained soil. Vegetation is mainly salt grass and redtop. Mottles are at a depth of 20 to 40 inches and the soil may have small areas that are strongly saline and alkali. Permeability is moderate. Runoff is slow and water erosion hazard is slight. Good control of irrigation is needed to lower the water table and reduce the salinity. Moderately saline areas are suitable only for grass and legume pasture. The capability unit is IIIw-2, irrigated.

#58 Juva Variant fine sandy loam: Map unit #41 has a productivity potential of 500 to 1000 lb/acre, in an Alkali Flat range site with very seep well drained soil. Present vegetation are greasewood, shadscale, galleta, big sagebrush and prickly pear. Permeability is moderately rapid, runoff is slow and water erosion hazard is slight. Capability subclass is VIIe, non-irrigated.

#80 Persayo-Chipeta Complex: Map unit #80 has a productivity potential of 100 to 300 lb/acre in the Desert Loamy Clay, and Shallow Clay range sites. This unit is 50% Persayo loam, 35% Chipeta silty clay loam and 10% other soils. The Persayo soil is shallow and well drained with galleta and shadscale vegetation. The depth to weathered shale is from 10 to 20 inches and has gypsum crystals. Permeability is moderately slow. Runoff is medium, and hazard of water erosion is moderate. Sheet erosion is active and shallow gullies are cut into weathered shale. Chipeta soil is shallow and well drained with vegetation in most areas being mat saltbrush, Nuttall saltbrush and shadscale. Permeability is slow. Runoff is rapid, and water erosion is high with active rill and gully erosion. The soil capability subclass is VIIe, non-irrigated.

#90 Ravola - silty clay loam: Map unit #90 has a productivity potential of 300 to 700 lb/acre, in a Desert Loam range site with deep well drained soil. Galleta, shadscale and greasewood vegetation are present where soils are not cultivated. Permeability is moderate. Runoff is medium, and water erosion hazard is moderate. This soil is not practical to revegetate in large areas. With irrigation these areas are suited to rotations of alfalfa hay, small grain and corn. Crop residue should be incorporated and fertilizer applied. The soil capability unit is IIe-2 irrigated, and subclass VIIe non-irrigated.

#93 Ravola-Slickspots complex: Map unit #80 has a productivity potential of 500 to 1000 lb/acre, Alkali Flat range site. The Ravola soil is deep well drained and strongly alkaline below 20 inches. Permeability is moderate. Runoff is medium and water erosion hazard is moderate. Runoff from adjacent areas may form gullies. The slickspots are barren or nearly barren and have a strong alkaline, nearly impervious surface layer of loam about 4 inches thick. It is not practical to revegetate large areas of the Ravola soil because of low precipitation and high alkali content. The slickspots are irregularly shaped and intermingled. The soil capability unit is subclass VIIIe non-irrigated.

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#94 Riverwash: Consists of stream beds including meanders and other channels. Riverwash is used for wildlife habitat capability subclass VIIIw.

All soil types are rated poor to very poor habitat element potential by the Soil Conservation Service except unit #41 which has the potential for wetland, shallow water area habitat and unit #55, Hunting Loam, has a fair potential for all habitat except coniferous.

Productivity information is also summarized from work conducted in the summer of 1983 in Section 3.11, Tables 1 through 14.

Findings:

The Permittee has provided a description of the permit area soils. Since the soils were disturbed prior to the enactment of the requirements of SMCRA pre-disturbance descriptions were not available. The applicant has met the requirements for description of presently disturbed soils and has generally described soils in the surrounding permit area.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.22; R645-301-411.

Analysis:

The 1984 State Permit Decision Package determined the premining land uses were "undeveloped lands" in the areas occupied by the coal cleaning plant, the railroad system and the refuse disposal. The remaining areas were determined to be used for limited grazing. The Permittee's plan indicates the premining land uses were rangeland, wildlife habitat and limited crop production. The Permittee's description should match the premining land use description, identified in the State Decision Package, unless information is presented which demonstrates the determination made was incorrect. Premining land use is determined to be those uses that were properly managed which the land previously supported prior to mining.

The Wellington Preparation Processing Plant has been in operation since 1958. Land use at the time of permit issuance were described as industrial, grazing and undeveloped lands. Current land uses are described as industrial, grazing, cropland and undeveloped lands on Exhibit E9-3343(1). The area is zoned by Carbon County as M&G-1, and the plan contains summaries of the activities that are permitted in this zone.

The postmining land use was approved to be returned to "undeveloped lands". The Permittee's pre-mining land use, as identified in the plan, needs to be in concert with the approved premining land use. Any changes in the postmining land use requires a public comment period as required by R645-301-412.130 and R645-301-414.

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Findings:

The land use information was determined adequate in the 1984 State Permit Decision Package. Land uses were determined to be undeveloped land in the areas occupied by the coal cleaning plant, the railroad system and the refuse disposal. The remaining areas were determined to be used for limited grazing.

The Permittee must provide the following, in accordance with the requirements of:

R645-301-120, a premining land use description which is consistent with the findings of the premining land use identified in the original permit decision package or, provide an amendment demonstrating the premining land use was incorrectly determined. Premining land uses are determined to be those uses that were properly managed and those uses which the land previously supported prior to mining.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 785.19; R645-302-320.

Analysis:

A reconnaissance study including the Wellington Permit area was provided by the U.S. Department of the Interior Office of Surface Mining Reclamation and Enforcement. The study shows areas designated as potential Alluvial Valley Floors. Map units included in the boundary show surface irrigated sites, sub-irrigated sites, and potentially irrigable sites surrounding the disturbed areas. These three map units meet the water availability criteria and geomorphic criteria of Alluvial Valley Floors and are designated potential AVF'S (further site specific studies may clarify delineation of actual AVF's).

The regulatory section R645-302-323 states that R645-302-323.100 does not apply to those lands which were identified in a reclamation plan approved by the state program prior to August 3, 1977, for any coal mining and reclamation operation that, produced coal in commercial quantities and was located within or adjacent to alluvial valley floors, or obtained specific permit approval by the Division to conduct coal mining and reclamation operations within an Alluvial Valley Floor. The Findings Document issued August 22, 1984 indicates coal processing plants not located at, or near, the minesite or within the permit area for a mine are not required to investigate the presence of Alluvial Valley Floors (UMC 785.19, UMC 827, UMC 786.19(1)). The Wellington Preparation Plant was in operation prior to August 3, 1977 and is therefore considered to have Valid Existing Rights. The approved plan included disturbances for topsoil borrow areas. These areas were not previously disturbed or specifically demonstrated to meet the regulatory requirements however, the August 22, 1984 technical analysis indicates topsoil borrow was necessary for reclamation. With the June 30, 1995 submittal topsoil borrow areas are located in the designated potential AVF's. Area "A" was expanded; and identification of a new area, area "E" was included.

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Alluvial Valley Floor information is provided in the permit. Section 2.0 addresses the requirements of R645-302-320; soils distribution is shown on Figure G9-35109. The general map unit of soils encompassing the Wellington Plant site is the Ravola-Billings-Hunting unit. Section 6.24 states the area contains an alluvial aquifer underlain by shale. Riparian and agricultural vegetation is presented in Figure E9-3443 and described in Section 3.11. Additional information can be located in 2.22 which further describes the soils at the topsoil borrow site "A". Samples obtained in April of 1995 indicate free water was encountered at various depths in the agricultural fields area. Soil profile information is reported in Appendix B. The soil from Area "A" will be applied 30 inches deep over the slurry ponds.

The topsoil borrow area "A" is described by soil profiles NEICO-1 through NEICO-4 (1995 samples) and Borrow-1 (1994 samples). Map elevations were estimated for these sites to be 5339.8, 5338.8, 5338.5, and 5337 feet respectively. The soil area of NEICO-1 is moderately well drained. Free water was encountered at a 91 inch depth, at this soil sample site, and has a fluctuating water table probably to 72 inches according to the Permittee's interpretation. Slight mottling did occur at 26 to 52 inches and again at 72-91 inches. The mottling occurrences at the 26 to 52 inches could be related to wet/dry climatic cycles, but are more likely related to: irrigation practices; Price River water elevation upstream; and spring subsurface water contributions.

The Permittee believes indicated that the upper watertable elevation was reached at 91 inches on May 26, 1995 (7.6 feet or an estimated elevation of 5332.2 feet), since it was spring and had been a wet winter. It should be noted that previously the area climate was in a drought period, potentially providing a soil moisture deficit. However, existing data support the Permittee's estimate for high water table elevations in the easterly half of the topsoil borrow area; high monthly mean flows in this area of the Price River generally occur in May; and quarterly water depth measurements in the nearby well, GW-14, had a high water level of 5332.6 feet in September of 1992, approximately 7 feet (84 inches) from the surface. This well fluctuates to approximately a 13 foot depth. The watertable fluctuation in this area is most likely influenced by Price River flows feeding the alluvium from north of the permit area. This area does not appear to be fed from the adjacent river section from the east.

NEICO 2 is similar to NEICO 1 but is deep and well drained. Soil water content was found to be moist at 50 inches with a free water surface at 118 inches or approximately 9.8 feet from the surface or a 5329.2 foot elevation. NEICO 3 is identified as being medium to well drained with slight moisture at 47 inches and very moist at 73 inches. Standing water was at 140 inches (11.6 feet or approximate elevation of 5326.9). NEICO 4 is identified as being well drained with slight moisture at 66 inches and very moist at 114 inches with the water table greater than 9.5 feet from the surface or less than 5327.5 feet.

NEICO 4 and NEICO 2 are likely to be located in an area where the alluvium depth is the greatest from the surface, assuming the pattern from Exhibit 612a does not change greatly over the extrapolated distance. Likewise, NEICO 3 is closest to the river and would have less depth from the surface to the bottom of the alluvium. However, the water surface

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elevation is greater at the north east end of the site. There is also a greater water surface elevation at Well 8, at the south end of the disturbed area. Therefore, the flow through this area is most likely from the north and a portion of the groundwater flow may discharge to the river near the proposed borrow area.

Topsoil borrow area "E" was described in the 1994 survey. Area "E" has been mapped as a Ravola - Slickspots Complex. The site is in a flat lying agricultural field on an alluvial fan north of the slurry cells. Data from groundwater well GW - 1, in this area, was measured quarterly and fluctuates between 7.1 feet (March, 1987) and 15.7 feet (March, 1991) from the surface elevation.

Total dissolved solids for surface waters at the upstream and downstream sites varied between 540 mg/l and 3280 mg/l from 1985 through 1994 (extreme values were not considered in this range as they occur infrequently). The average values over a period from 1985 to 1990 are 2,098.7 mg/l for SW-1 and 2643.2 mg/l for SW-2 (high values are included in this average). The average value is in a range where water can be used for tolerant plants on permeable soils with careful management practices (information presented in "The Alluvial Valley Floor Identification and Study Guidelines", U. S. Department of the Interior, OSM August, 1983).

Another method of classification includes the conductivity and SAR. Conductivity for SW-1 and SW-2 are approximately 2200 mhos/cm and lie at the edge of the range for high and very high salinity hazard. Since SAR information was not provided this analysis was not completed and compared to the method discussed previously.

Subirrigation, in terms of AVF, occurs if water is available long enough to have a recognizable effect on the species type and productivity, and allows the root penetration to the capillary fringe above the water table. Water availability should outweigh the evapotranspiration rates to maintain productivity of the plant during some part of the growing season. Commonly the majority of crop roots are found in the top 4.6 feet although, alfalfa roots have been noted at much deeper depths. Roots from the site existing during the soil sampling (cropped with alfalfa) were noted having many roots through 12 inch depth and few fine roots to the 52 inch depth at NEICO 1; root presence was noted as many to 12 inches and few fine roots to 29 inches at NEICO 2 with soil moisture at 50 inches; root presence was noted as common to 24 inches and few fine roots to 47 inches at NEICO 3 with slight soil moisture at 47 inches; root presence was noted as common to 14 inches with few fine roots to 42 inches at NEICO 4 with slight soil moisture at 66 inches;

Information presented by the applicant indicates the productivity on the borrow area in 6500 lbs/acre for alfalfa and 5500 lbs/acre for corn. Corn cannot be produced in this area without significant irrigation. No information on the importance of sub-irrigation on crop yield is presented: it is suspected that the sodic nature of the water may be a disadvantage to sub-irrigation influences on vegetation.

In Section 2.21 "Prime Farmland Investigation", Mr. Francis T. Holt's letter states, "The area is too saline and without irrigation water the moisture requirement for prime farm

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land cannot be met". Mr. Holt's letter indicates the groundwater has high salinity with little sub-irrigation potential. The Permittee states that data from 1985 to present in Table 7.24.3 shows a strong sodium sulfate type water at the load-out area.

Based on the presented information the following findings can be made:

- Unconsolidated stream laid deposits holding streams are present in the permit area;
- There is sufficient water to support agricultural activities as evidenced by historic flood irrigation to fields between the DRG&W Railroad and the Price River and to the area north of the slurry cells.
- Capability of the areas to be irrigated is present based on available stream flow from the Price River and available water rights, now used by the mine, which could be transferred to the areas for farming should industrial use be terminated. Because the sites are alkaline and have high salt content a type of flood irrigation or leaching process would be necessary to farm this area. (Field crops with good salt tolerance included barley, sugar beets, alfalfa and sweetclover {SCS, 1977}.)
- Subirrigation probably does not exist to increase yields beyond what would be expected without available sub-irrigation. However, flood irrigation may be necessary to decrease salt accumulation in the alluvial valleys where the water table is high.

The proposed mining and reclamation activities in topsoil area "A" is not considered significant to an existing farm and is of negligible size. Removal of the 52 inches in borrow area "A" will decrease the depth to the water table and may increase concentration of salts in the area. Feasibility of reclamation for this site should be sufficiently demonstrated.

Findings:

The August 22, 1984 permit states that coal processing plants not located at or near the mine site or within the permit area for a mine are not required to investigate the presence of AVF's (UMC 785.19, UMC 827). However, the current regulations R645-302-320 applies to any person who conducts or intends to conduct coal mining and reclamation operations on areas, or adjacent to areas, designated as Alluvial Valley Floors. Coal mining and reclamation operations include preparation plants. Although the Division did not make a finding on Alluvial Valley Floors when the permit was issued the permit approval included existing disturbances for areas within or adjacent to Alluvial Valleys.

The preceding finding stated; "Therefore, the Division finds that additional Alluvial Valley Floor delineation and determinations would be necessary according to R645-302-320 if, the Permittee proposes additional disturbances beyond those contained in the plan approved based on valid existing rights."

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The Division hereby finds that the additional proposed disturbed areas are located in an AVF for Topsoil Borrow Areas "A" and area "E". The Permittee has committed to provide additional information demonstrating the feasibility of reclaiming the areas proposed to be disturbed within the alluvial valley floor. (See, TOPSOIL AND SUBSOIL, Findings: R645-301.233.100, Topsoil Substitutes and Supplements.) If the site may affect the waters of the AVF a complete application for operations Affecting Designated Alluvial Valley Floors as discussed under R645-302-322 will be supplied.

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-270.

Analysis:

Although the MRP (Section 2.2) states that one land use in the area is irrigated crops, the 1982 SCS letter cites saline soils and lack of irrigation water as the basis for a non-prime farmland determination. The Division should note that Farmland of Statewide Importance and Prime Farmland have been designated immediately adjacent to the northern portion of the permit boundary (Utah Agricultural Experiment Station Research Report No. 76, "Important Farmlands of Parts of Carbon, Emery, Grand, and Sevier Counties").

Findings:

The Division has determined no Prime Farmlands are present in the permit area (Findings Document of August 22, 1984). The basis for the Non Prime Farmland determination was the 1982, Soil Conservation Service Determination memo. This determination should be contained in the permit Appendix "Supporting Documentation".

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.22; R645-301-623, -301-724.

Analysis:

The geologic map, Drawing C9-1213-R, shows the outcrop of the Mancos Shale, alluvium and gravel. Quaternary alluvial deposits directly overlie the Bluegate Shale member and consist of consolidated to unconsolidated clay, silt, sand and gravels. The Bluegate shale is the most prevalent member exposed in the vicinity of the plant area.

Alluvial deposits provide subsurface water for agricultural and industrial use along the Price River. Data presented in Utah Hydrologic Data Report No. 32 (C. T. Sumsion, 1979) as well as others, show the water table to be within 15 feet of the surface near the Coal Preparation Plant. Bluegate Shale permeabilities ranged from 13 feet per year to 3,700 feet per year. This range of permeabilities is considered low to moderate and may be high

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because the drill holes extended only 10 feet into the shale, and probably measured the more weathered surface of the shale.

The Ferron Sandstone member underlies the Bluegate shale and also appears as a continuous unit throughout the plant area. It outcrops about 1.5 miles east of the plant facilities and dips 18 degrees to the north west. Information from the Ferron Sandstone is obtained from old oil exploration well logs. No information is provided by locally drilled wells. The Ferron Sandstone is estimated to be at an approximate elevation of 4905 feet above sea level in the load out area. The Ferron Sandstone in the vicinity of Wellington is represented by very fine sandstone and sandy siltstone hydrologically disconnected from the units that make up the Ferron Sandstone near Emery (selected information from the August 22, 1984 CHIA).

Alluvium thicknesses for the Wellington minesite are presented on Map 612a. Alluvium at the Preparation Plant ranges from a few feet to 55 feet in the area of GW-8. The deepest known depth to alluvium at the slurry cells is 40 feet. Information used to map alluvium for the area under the coarse and fine slurry refuse were obtained from data contained in the engineering stability analysis Appendices E, C, and the As-Built designs for the refuse ponds dated January 25, 1993. However, many of the drill holes did not reach the Blue Gate Shale formation and exact depths are not known.

Currently the Permittee does not mine coal at the preparation plant. Therefore, characteristics of the coal to be mined and the strata above and below is not required for this purpose. However, information is required for protection of the hydrologic balance. The Permittee has presented a general configuration of the piezometric surface on Map E9-3451. The alluvium under the slurry cells provides a greater flow velocity and thus the dominate flow direction is to the south in this area. Alluvial flow from the vicinity of the slurry cells is less likely to flow toward the west. The Mancos is a tight formation and would yield little water unless piping, cracking or an inter-bedded alluvial formation allows water to flow through the shale.

Premining Condition

According to the 1983 PHC Appendix, the alluvial system premining condition was assumed to reflect the surface topography, with ground water flow from topographically high areas toward the Price River. The 1983 PHC also suggests that during slurry operations the ponds serve as points of high ground water potential while the North Siaperas ditch creates a low water potential (according to Figure 14 at 5367'). The Siaperas ditch potentially receives subsurface flow from the adjacent slurry area from irrigated fields to the north.

Geologic and engineering information on the dikes is included in the Rollins Brown and Gunnel Engineering Report Appendix C completed in 1978 and E completed at an unknown later date.

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North Dike

The North Dike was formed by dumping material excavated for a trench (the Siaperas ditch) and was not compacted according to information presented in Appendix C. Seepage has been observed at the downstream face of this dike. Most sands start at a depth of approximately 15 feet from the top of the embankment.

Upper Refuse Dike

Historically, seepage has been reported to have occurred around the left abutment of the upper tailings dike in the natural materials. The upper 15 to 25 feet are composed of coal refuse. Silt and granular materials are the foundation materials. It was expected that the subsurface materials were saturated on both sides of the dike. The Upper Refuse Dike is approximately 20 feet high. Most sands start at a depth greater than 20 feet from the top of the embankment. Sandy soils are found below the Upper Refuse Dike at test holes numbers 2, 3, and 4. The location of these drill holes may represent the most likely place for movement of water through the upper refuse basin in other words in the central portion of the Upper Refuse Dike embankment.

Lower Refuse Dike

The Lower Refuse Dike within the embankment was determined to consist primarily of silty clays to the base of the structure and is underlain with sandy gravel to gravelly sands. It could be anticipated that some seepage would occur below this dike. The most extensive portions of gravel are under drill holes 10 and 11 to the center and north west of the center of the dike. The Lower Refuse Dike is approximately 35' high. Most sands are located at a depth greater than 35 to 40 feet from the top of the embankment. It was noted that no seepage was seen through the embankment 1 year after the 1983 dike expansion.

Clear Water Dike

The embankment of the Clear Water Dike also consists mostly of silty clays with some sand lenses. The phreatic surface was determined likely to exist throughout the embankment. Seepage appeared to occur under the dike. The sandy gravelly portions were found under test holes 15, 16, and 14 from the center to the south of the dike. Most sands are located at a depth greater than 35 to 40 feet from the top of the embankment.

Findings:

The Geologic information presented was determined adequate for the purposes of determining stability of the slurry impoundments. The Permittee has used available information which gives an indication of alluvial depths under the slurry cell and the disturbed area of the preparation plant. Should it be determined necessary to understand the Probable Hydrologic Consequences of mining operations and reclamation, site specific information for the depth to alluvium may be necessary.

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HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

Analysis:

Sampling and Analysis

The Permittee has committed to sample according to the current edition of "Standard Methods for the Examination of Water and Wastewater". The Permittee has had problems collecting representative data. Many of these problems resulted from collection methods. The Permittee has included a section on sampling methodology in Section 7.31, Appendix 7.31-1, however, the statements are general and noncommittal to follow the sampling procedures mentioned.

Baseline Information

This site was in operation prior to the enactment of the 1987 mining law. Much of the information collected is operational because mining already occurred at this site. The Permittee has provided a summary of surface and groundwater rights information in Tables 7.24-3 and 7.24-4. The main purpose of obtaining the water rights is to be able to contact water users in case of a water impact or emergency of a harmful nature. Therefore, the permanent and approved sources within the potential impact area (downstream surface water uses as well as the local wells) are of more importance than those a significant distance away.

Water diversion information on Drawing G9-3507 and Water User Claim Numbers from Table 7.24-4 are difficult to locate on Drawing G9-3507. The Operator was requested to clarify the information, but claims that under investigative conditions it would not be necessary or profitable to work from the water right table to the map. It is felt the Permittee's summary table should contain source location descriptions for clarity. However, the Permittee meets the minimum requirements.

Ground-Water Information

The local groundwater consists of shallow alluvial waters. The Blue Gate Shale Member serves as a confining layer for the alluvial groundwater. The Ferron Sandstone formation is also located in the permit area in the vicinity of Wellington. This formation is a groundwater supply near the town of Emery. However, the potential for groundwater impact is determined to be limited to the alluvial aquifers within the Preparation Plant and Slurry impoundment areas. No springs or seeps were identified in the permit area although one spring issues from alluvium along the Price River two miles north east of the facilities. Pertinent groundwater information for the groundwater alluvial systems are summarized below:

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Seasonal well fluctuations are generally highest in late spring to early fall. Large water level fluctuations over short periods generally do not occur. The groundwater at the load out generally has a higher salt content and is a strong sodium sulfate water.

Preparation Plant Area

The alluvial aquifer within the preparation plant area has two potential gradients. It appears one flow component is toward the Price River southeast of the preparation plant, and another flow component discharges to the river near topsoil borrow area "A". Although, a portion of groundwater from the preparation plant area may flow toward topsoil borrow area "A" the greatest flow component probably comes from the west, upstream of most mining related activities. The groundwater source most likely originates upstream of the permit area where alluvial deposits provide a conduit for the Price River to be conveyed through alluvium toward the site. An additional recharge zone may occur from subsurface flows and activities at the preparation plant near Well GW-8 where the highest known surface water elevation exists.

Because no pre-disturbance information exists actual baseline information is not available. However, the Permittee has developed well GW-14 which is considered mostly out of the range of influence of site operations and may be used as a "baseline" well. Special consideration may be necessary when using this data.

Slurry Impoundment Area

Two flow gradients can occur from the slurry cells based on operating conditions or precipitation events. The major alluvial ground water flow direction is predominately toward the Price River in a southerly direction. Locally, a secondary flow regime toward the Siaperas ditch is likely to occur at the north west end of the slurry cells, when the water in the slurry cells is elevated above the ditch. This occurs when the water in well GW-3 rises above the 20.6 foot level (depth to water is less than 20.6 feet). This flow direction was present during slurry operations. Since slurry operations have ceased the localized flow to the Siaperas ditch occurs less frequently.

Because no pre-disturbance information exists actual baseline information is not available. However, the Permittee has developed well GW-1 which is considered mostly out of the range of influence of the slurry operations and may be used as a "baseline" well.

Surface-Water Information

The Permittee has presented Price River surface water flow information from 1972 through 1986 collected at a USGS gauging station below Miller Creek near Wellington. Seasonal variation indicate the highest flows occur during spring followed by a gradual decline through-out summer. Lowest monthly flows occurred in 1977 and 1978 with the minimum monthly flow of 243 cfs in June of 1978. Maximum monthly flows occurred in 1983 through 1986, for the period of available data, with the largest maximum monthly flows of 53960 cfs occurring in June of 1983. Highest monthly flows generally occurred

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from April through July with the highest frequency of maximum monthly flow occurrences in the month of May.

Mundorf (1972) reports that at Wellington, total dissolved solids concentrations range from 600 to 2,400 mg/l in the Price River. The major cations and anions are a variable mixed type. Downstream of Wellington, at Woodside, the dissolved-solids concentration typically range from 2,000 to 4,000 milligrams per liter and major water constituents are sodium sulfate. The high sodium sulfate waters are related to the increased contact with the Bluegate Shale Member.

Information on water use is described in the permit. The major use in the area is irrigation. Two points shown with the same water right number define either multiple diversion points or, the beginning and end of a reach where water may be diverted. Water rights described, in the legend of Drawing G9-3507, as being unapproved are going through the approval process. Based on the location of the diversion point it appears that water right 91-254 is associated with the track hopper. It allows water to be withdrawn from an underground sump for industrial use.

Site water diversion locations including: the dam and sluiceway to the pumphouse; the track hopper; and a "dust suppression water source" are shown on Exhibit 712d. The Permittee has used the track hopper for road watering. A description of that use is in Section 7.31.700.

Baseline Cumulative Impact Area Information

The Division has not revised this portion of the TA at this time. A full cumulative impact area assessment should be completed at the next midterm review.

Modeling

Some modeling, analysis and statistical data have been used by the Permittee. Monitoring data has also been included.

Alternative Water Source Information

The plan includes a statement in Section 7.27, "In the event the owner/permittee's actions result in diminution or interruption of the water rights of a legitimate water user, the owner/permittee will make available water from the owner/permittee owned or controlled water rights during the diminution or interruption" and, " In the event that the quality of water becomes unsuitable for use by a legitimate water user due to action by the owner/permittee, the owner/permittee will make available water from their owned water rights during the period of unsuitable water quality."

The Permittee's commitment to replace the water rights in quality, assumes the quality of water for their rights would not be affected. The water rights indicated to be available to the owner/permittee is approximately 10 cfs. The location of the water right

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diversion may affect the quality of these rights. The replacement of use or quality would need to be coordinated between the State Water Rights Department, Division of Water Quality, and the Division of Oil Gas and Mining as appropriate.

Probable Hydrologic Consequences Determination

The potential water quality impacts at the Wellington site determined to be most critical include increases in TDS, leaching of Boron and Selenium from the Slurry cells, and the potential for hydrocarbon and chemical contamination to reach alluvial waters at the preparation plant. These issues will be discussed further in the following sections.

Water Use

Historical water uses included irrigation of test plots in 1987, and Price River water utilized for slurry operations. Current water rights belonging to the company include 10 cfs in the Price River. The Permittee has not included an estimate of current water use for mining operations but, implies that the use is small and no foreseeable changes in operations are planned. The Permittee should provide an estimate of the water used in the operations annually (road watering) and an estimate for water that may be used in future proposed operations. At this time water use is considered minimal and the probability to impact water availability is negligible.

Water Quality Impacts

Water quality data at the Wellington Plant indicate concentrations for many parameters were reduced from 1985 through 1986. According to the Permittee, increased precipitation during this period was credited for having a dilution effect on Magnesium, Sulfate, Chloride, Manganese and TDS. It should also be noted that during 1984 the load out was idled which may also have had an affect on these constituents.

Data analyses of wells surrounding the Slurry Cells indicate there is a greater concentration of TDS at GW-2 and GW-3. The Permittee suggests the increased TDS in the Ground water near wells GW-2 and GW-3 is a result of regional irrigation, groundwater flow, and evaporation. The assumption is that the Siaperas Ditch influences and concentrates salts in this area which affects the concentrations at the wells. Although some salt concentrations will occur in this area from evaporation, there is some information which suggests this is not the only factor controlling water quality in this area. (See: "Potential Groundwater Impacts" of this T.A.).

Information in the PAP includes a discussion of trends in water quality for postmining reclamation conditions related to water availability and climatic changes. Although Boron and Selenium are identified as potential water monitoring impacts, data have not been collected recently for analysis of these parameters. The Permittee does discuss characteristics and presence of Boron and Selenium as determined by the slurry soils analysis (saturated paste methods). The soil analysis completed for the upper depths of slurry show accumulations of salts that are probably attributable to capillary actions and diffusion driven

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by evapotranspiration. The potential impacts resulting from high Boron and Selenium to groundwater are found within Section 7.28. Increases in Boron over the amount needed by some plant species can be toxic to plants. Selenium values reported in Appendix B show concentrations ranging from 0.025 to 0.40 mg/l. With pH values above 6.6, Selenium found within the refuse ponds may potentially be leached.

Acid and Toxic

The Permittee's discussion in Section 7.28.3.3 details the leachate sampling from the refuse pile, and includes pH, Acidity as CaCO_3 , Calcium, Sodium, and Total Dissolved Solids. Data obtained from the slurry cells included analysis for Sulfur and the Acid Base Potential. Data available indicate the potential for acid formation at the Preparation Plant is low. However, Boron and Selenium values were considered to have a potential for impact.

The Permittee collected and analyzed samples of the slurry to an 8 foot depth. The information provided does not suggest acid forming constituents are present. However, the samples may not necessarily represent the extent of waste material found below the 8 foot depth. The fine slurry materials are shown to be as deep as 5362' at cross section A-A' on Exhibit E9-34-60, near the adjacent hill slope. According to the Slope Stability Evaluation US Steel Tailings Dike Appendix C, the lower refuse dike is approximately 35 feet high. The current elevation of the tailings is approximately 5370' while the dike elevation is approximately 5383'. Therefore, the depth of slurry is at least 22 feet deep in some places.

The characterization of material below the 8 foot depth is not described by the Permittee's data. Well water samples show pH, in the slurry area, have been as low as 6.62 in December of 1987 (GW-2) and 3/8/1992 (GW-4) otherwise values are near or above 7. Therefore, there appears to be no apparent problem of acidity. Although it is believed an upward concentration generally exists, the quantity of downward leaching of Salts, Boron, and Selenium for moist seasons and along the contact between the alluvium and slurry materials remain unknown.

The presented saturated paste data samples show a decrease in Boron with depth through the slurry. Also, an accumulation of Boron is shown near the surface. Although the concentration of Boron is occurring in the upper zone, monitoring is not adequate to determine to what degree precipitation or alluvial waters affect the transport through the profile. It is unknown, if significant leaching or accumulation occurs below the 8 foot interval. Assessment of water moving down through the profile or alluvial water table fluctuations within the interface of the slurry are largely unknown.

The Permittee has estimated, through modeling, an approximate increase of TDS to groundwater and surface waters from the slurry cells will be 0.4 to 7.5 % and suggests an increase of other parameters would be similar. When comparing TDS at GW-1 and GW-4 the data show increases are between 5% and 77% greater at the downstream station, while increases in TDS between SW-1 and SW-2 varied from 2% to 64%. Unfortunately, most surface water and ground water data were obtained on different days and are not located far enough downstream to measure influences of alluvial waters below the slurry cells. Natural

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variation vs. influences from the operations cannot be determined by the existing sampling program.

No Boron or Selenium data are available from the recent water monitoring program. Selenium and Boron are regulated state water quality standards for the Price River. The Permittee has added total and dissolved Selenium and Boron to the operational water monitoring parameters in Table 7.24-2 (revised 11/10/94).

The Permittee has committed to install new wells to replace existing wells GW-3 and GW-6, and will attempt to collect both surface and groundwater samples on the same day. The MRP states that collection of "same day" surface and groundwater samples may be important at stations SW-2 and GW-6; and at SW-4 and GW-2 and GW-3, since there is a potential for surface influence between these stations. The permittee needs to provide a commitment to sampling on the same day to collect data which monitors potential impacts and aids in a determination of the Hydrologic Impacts. SW-1 should also be monitored on that day. Except for the fact that there may be no water at SW-4, there is no reason why this cannot be done on one day during a three month (quarterly) period.

In the June 1995 submittal memo, the Permittee proposed that two nested Piezometers be installed to measure vertical water quality variations in the undisturbed and disturbed area. The addition of two new wells is necessary. However, rather than replace GW-3 which does provide some information on waters in the slurry cell and in alluvium, the Permittee should replace GW-2 which does not "represent alluvial water quality" and is not "representative of current conditions" (response memo June 5, 1995). Well GW-6 may continue to supply useful information which provides water quality for slurry groundwater potentially mixed with the alluvial river water. GW-5 is dry, this well does not provide information for the proposed operations. This well should be removed and properly abandoned. Prior to developing the proposed wells, location and design features need to be discussed with the Division and should include mapping, as well as, meet other applicable regulatory requirements.

Potential Surface Water Impacts

The greatest potential for surface water impacts at this site comes from two sources, the shallow alluvial waters associated with the Price River and surface water run off to the Price River. The Permittee has concluded the drainage of toxics into the surface water would be minimal due to the large retention volume found in the ponds during the operations phase. The volume of water retained reduces runoff to surface waters. However, it increases potential for leaching from the slurry cell area through the alluvial aquifer to the Price River. The Permittee stated the greatest potential for rainfall contributions is during November and March. The fact that groundwater data from 1993 and 1992 shows highest elevations and highest variation in TDS in the station downstream of the slurry cells in March indicates there may be an increase in TDS with increases in precipitation. The Permittee did not develop a specific conclusion regarding the groundwater discharge to surface waters using available data.

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The potential for increased contributions of sediment off site is minimized by the Sedimentation and Erosion Control Plan. See: "Hydrocarbons" under "Potential Impacts" discussion in this T.A. Since the reclamation phase includes removal of the dikes, topsoil and vegetative cover may play a more important role in the runoff water contributions during this phase.

Potential Groundwater Impacts

Because the track hopper is completed in the water table it was felt this area was a potential source of contamination. The Permittee uses this area as a water source and has retained a pump in the building to draw water for road watering. A discussion regarding the monitoring of the track hopper has been added to the permit in Section 7.31.21. The Permittee feels the water at this site was not developed for monitoring and is not representative of local ground water. The track hopper is considered a sink by the Permittee. Due to a constant evaporation draw, water seeps through the concrete structure into the track hopper. According to the Permittee there is no source within the building which can drive a reverse gradient.

The evaporation process occurring during the operational phase could have a potential to affect surrounding ground and surface waters since this water has a long history of being used for dust control. The Permittee feels the evaporation concentrates the salts and increases dissolved solids in the track hopper. It is recognized that Mancos shale around the site may also contribute to increased Dissolved Solids, Sodium, Calcium, and Sulfate. On April 30, 1994 the Permittee obtained a full baseline water quality sample. These results were compared with compiled averages and maximums from Wells GW-1, GW-7, GW-13 and GW-14. A summary of the data was provided in Table 731.21-3. This data shows pH, Magnesium, Chlorine and Manganese exceed historic averages. The Division requests a copy of the lab results be submitted for our records.

Available data indicates there is an increased TDS at GW-2 and GW-3. The Permittee attributes this to regional irrigation waters and the evaporative affects of the Siaperas Ditch. However, addition information indicates this is not the only factor with a potential to affect the water quality at these wells. Discussions in the permit response memo dated June 5, 1995 indicate GW-2 and GW-3 have other influencing factors. (See: "Groundwater Monitoring" in this T.A.).

Data analysis by the Division indicates there is an increased contribution in TDS to the down gradient wells GW-4 and GW-6. Site GW-4 has increased TDS over GW-1 for 90% of the comparable data sets. The down gradient increases could come from the slurry materials and may be controlled by the hydraulic conductivity of the slurry material where it contacts the alluvium.

The Permittee's conclusions and the information in the June 5, 1995 response memo are somewhat conflicting. The plan concludes that little or no impact to the groundwater system would be anticipated for the following reasons:

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- A. *Levels monitored at stations GW-1, GW-2, and GW-3 and GW-14 (stations considered to be background) indicate concentrations equal to or significantly greater than concentrations recorded at other stations. Increased TDS at GW-2 and GW-3 are believed to be increasing due to a natural phenomenon related to irrigation and evaporation.***

GW-3 and GW-2 should not be analyzed as an average for background data, with the intent of comparing alluvial waters upstream and downstream of the slurry cells because of the following factors:

1. The Permittee has indicated that Well GW-3 when it is above the 20.6 level would be measuring water with influences from the slurry cells.
2. GW-2 is noted to be measuring clays or the shale and is not comparable to the alluvial waters and therefore, is not likely to be influenced by the irrigation waters. A review of GW-2 confirms the well water elevation has been 0.5 to 16.3 feet below the bottom of the Siaperas Ditch (Midterm Permit Response Memo, June, 1995).

GW-1 and GW-14 appear to have little potential influence from mining operations and could be considered background. However, there could be a small (emphasis added) flow component from the high head at GW-8 that may travel toward GW-14. In the June 5, 1995 response memo, the Consultant noted that care should be exercised when interpreting data at GW-3. GW-3 could be used as a comparative tool to identify the local concentration of salts and/or determine if a pattern exists between concentrations at GW-3 and downstream wells.

- B. *The probability that the reverse gradient toward the Siaperas Ditch would occur is low based on the fact that the basin drains away from the area and accumulations in the Lower basin would reach 5374.5 feet and sufficient time to develop a reversed gradient would not occur. However, a localized condition may occur when the water elevation exceeds the elevation of the Siaperas Ditch.***

The Permittee's data show past, and occasionally, present well water elevations above 20.6 feet. This is when a local reversed gradient at Well GW-3 would occur. However, the overall alluvial gradient is toward the south. Current data comparisons do not account for this local gradient influence.

- C. *A comparison of Stations GW-4, GW-5 and GW-6 to that of baseline stations shows that water quality at the natural outfall to the basin is either equal to or superior to baseline water quality. If the slurry basins were producing poor quality water, these stations should be the first indicator.***

The Permittee has previously stated that the preparation plant area is a high sodium sulfate type water. Generally, waters in contact with the Bluegate Shale will have a higher sodium sulfate type water. When well data is compared, these comparisons should take into consideration local differences. When comparing GW-1 with G-4, and GW-6 the site

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specific data show increases in TDS downstream of GW-1 at stations GW-4 and GW-6. When including and averaging data for the wells developed in the Bluegate Shale, and for wells influenced by the Price River, with the wells in alluvial waters it will bias what affect the slurry cell may have on the alluvial waters downstream of the cells. The Permittee's comparison does not indicate whether the slurry basins are affecting water quality.

- D. Water quality concentrations collected at all ground water stations appear stable over time, meaning there are no clearly definable trends which have been observed and/or are continuing to occur since the late 1980's.***

If the Permittee wishes to demonstrate that this statement is accurate, an analysis which separates the data into appropriate time periods would be prudent. Logical periods to compare data include; the time span from first data collection up to 1984 when the load out idled, and from when the load out idled to the present date. High precipitation years and drought years should be compared for climatic affects.

Earlier statements indicate a dilution of some ions with the additional increased precipitation. Available data also show an increase in concentrations of some constituents when the slurry operations ceased. These constituents appear to be relatively maintained at the level reached following termination of the slurry operations. The applicant needs to provide an analyses of the data according to the factors which may influence the data such as climatic periods, and operational phases.

- E. Operations ceased adding materials and water to the slurry ponds in the early 1980's. The only water currently entering the ponds is through rainfall or natural runoff, neither of which contain high mineral contents that potentially occur in slurry water.***

The salts (at the surface due to evaporation and irrigation influences) or slurry materials may be leached from the slurry during high precipitation or high water table periods.

- F. Decreased inflows experienced since operations ceased have translated to a decreased leaching potential of slurry material.***

Decreased inflow does decrease the leaching potential below that experienced during the operational period. However, weathering and salt accumulations may have a large impact if enough water is available to flush the constituents.

The Permittee compared GW-4, GW-5 and GW-6 to that of "baseline" stations GW-1, GW-2 and GW-3. However, it was already indicated that GW-2, and GW-3 may be affected by the evaporative process of the Siaperas ditch at GW-3 and that GW-2 does not represent alluvial waters. When a comparison is made between non-mining influenced GW-1 with downstream wells GW-4 and GW-6, generally, there is an increase in TDS at GW-4 and GW-6 with a smaller increase between GW-1 and GW-6, than between GW-1 and GW-4. Since GW-4 is nearer to the base of the slurry cells this influence could be attributed to

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either increased concentration of salt in the downstream direction related to irrigation, leaching from the slurry cells, or influences from the Blue Gate Shale below the site. GW-6 is near the Price River and it is likely influenced by the alluvial Price River water which may account for the lower TDS values at GW-6 in comparison to GW-4.

The water elevations between GW-1 and GW-4 follow a similar pattern supporting the conclusion that alluvial waters flow between north and south ends of the slurry cells. No additional irrigation influenced inflows exist between sites GW-1 and GW-4. The Permittee should be able to show relationships between water quality, evaporative rates, and available water, if the increased TDS concentrations are related solely to irrigation waters. (Further discussions are included in the June 1995 permit response memo but, are not included in the plan). The sources of water which should be considered in water quality analysis include; irrigation water, slurry water, and precipitation.

The farmland north of the slurry cells has not been irrigated in the recent past. If the Siaperas ditch is the source of increased evaporation, you would expect to see an increased concentration of salts in a planar direction near the source of the Siaperas ditch and you would see a climatic variation in TDS at the well and ditch waters between the moist and dry seasons. This variability may be dependant on whether the wetting front will move the salts through the system out of influence of the well or will dilute the salts. One would expect to see a decrease in TDS during the wet season if water is in adequate quantity to leach the salts or provide dilution. One would see an increase in TDS when evaporation is dominating during the summer periods. At this time the determination of impacts related to irrigation waters, natural occurrences and the slurry cells can not be determined. The current monitoring is not adequate to make a determination on the proportion of constituents contributed from any of the potential sources.

To rectify this situation the June 1995 submittal memo indicates the Permittee proposes that two nested piezometers will be installed to measure vertical water quality variations in the undisturbed and disturbed area. In the memo, the first well is proposed to be up-gradient of the Upper Refuse Basin, and a second well is proposed to be installed in the general area of Well GW-6 but upstream of possible river impacts. The Permittee indicates that these wells will allow determination of water leaching from the slurry cells. However, with this design it will still be difficult to discern between influences from irrigation and from the slurry cell itself. An appropriate location for one of the wells, would be at the down stream end of the slurry cell. The nested piezometer should be set above and below the slurry interface and one deeper in the alluvium (dependant upon historic water elevations). Prior to implementing the addition of these wells, location and design features need to be discussed with the Division and should include mapping

Data comparisons and supporting statistics were not presented in a manner which lends credence to the conclusions drawn by the Permittee. However, the Permittee has indicated the monitoring plan is not adequate for this determination and committed to add two additional wells. A combination of analyzing data relative to timing, operations, and

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comparable monitoring points and providing the proper locations for the additional wells will allow an accurate analysis of the PHC for this site in the future.

Hydrocarbons

A direct connection between the surface water and ground water can occur with underground tanks. All oil storage areas except an un-bermed concrete pad, were located on soil with the potential for direct connection to the groundwater, therefore contamination could have reached groundwater with the previous above ground system. The Permittee indicates a bermed concrete containment will be used for the above ground tanks. These containment area dimensions would need to be included in the plan. The Operator has recently removed the tanks at this site. Storage tanks used or added to the site will require construction of the proposed containment structures. Additionally, in July of 1992 PCB transformers were removed from this site.

The information on the surface facilities map shows locations of Tanks and Oil Drum Storage Area FF. The area adjacent to the tank contained additional Oil Storage areas. Diesel and gasoline based product locations are shown on Map 712d. The shop building also contains oil, grease, and antifreeze, etc. The scale of the map for the area surrounding the main office was changed to include detail of other operation areas such as: the truck wash down area and steam cleaning area where de-greasers are used, the oil changing area, and the oil and antifreeze storage area adjacent to the office.

Facilities area EE is used for Non Coal Waste Storage and is in an alternate sediment control area. This area is not suited for all types of storage. If used for waste that may pose a threat to ground or surface water, it would require additional facilities that prevent leakage to the ground or surface water.

Dust suppressant is identified as soap and water. The plant contains drums of antifreeze in the area adjacent to the office. Although not discussed as such, antifreeze has been used as dust suppressant over the loaded train cars.

Findings:

A complete findings for this requirement cannot be determined until further water quality data assessment is provided.

The Permittee must do the following in accordance with the requirements of:

R645-301-725.100-3, develop and incorporate into the plan locations and construction characteristics for the proposed monitoring wells. The well locations must be added to the water monitoring map to meet the requirements of R645-301-725.100. Proposed locations should be approved by a Division Hydrologist prior to drilling. Clarify how the new proposed well location and monitoring scheme will be used in assessing the water quality characteristics as it relates to contributions from the sources referred to including: contact with the

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Mancos Shale; down gradient irrigation water characteristics; and the Slurry Cells. Rather than replace existing Wells GW-3 and GW-6, the Permittee should replace GW-2 which does not "represent alluvial water quality " and is not "representative of current conditions" (response memo June 5, 1995); retain Well GW-6 which supplies useful information on water quality for slurry groundwater potentially mixed with the alluvial river water; and remove and properly abandon GW-5 which is dry; and does not provide information for the proposed operations.

R645-301-130, provide the Division with a copy of the lab results from the track hopper data, obtained on April 30, 1994.

R645-301-728.200, provide adequate data analysis to support the conclusions made for the slurry cells. Appropriately compare and analyze data relative to climate; changes in operations, and waters monitored in the wells, appropriately compare well water data according to the monitored water source (see discussions under analysis). Separate analysis of data obtained from GW-2 and other wells developed in the Bluegate Shale, and for wells influenced by the Price River, with the wells in alluvial waters which bias what affect the slurry cell may have on the alluvial waters downstream of the cells. Clarify the discussions in the PAP to reflect the discussions in the June 5, 1995 Response Memo, pages 1 of 8 through page 8 of 8, under the following headings: R645-301-621 Geologic Information, R645-301-725.100-3 Hydrologic Resource Information, R645-301-728.200 Probable Hydrologic Consequences and R645-301-730 .

R645-301-731.211, adjust the text to **clearly** commit to sample SW-2 and GW-6; and at SW-4 and GW-2 and GW-3, and SW-1 on the same day, in order to provide water monitoring that aids in a determination of the Hydrologic Impacts. The monitoring of surface water and groundwater to be taken on the same day is necessary to determine natural variations vs. influences from the operations.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The affected area boundary does not extend beyond the permit area. The disturbed area is located on the Soils Resource Map E9-3339 and is identified as being 392 acres. The applicant has provided an outline of the disturbed area and referred to it as the permit areas on some maps. Soils resources are identified on G9-3510 and topsoil borrow area soils are

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identified on G9-3511 (incorporated September 13, 1995). Soil sampling locations associated with the preparation plant area and haul road construction are located on Drawing 4076-6-8 B.

Archeological Site Maps

No Archeological Sites were identified in the permit or adjacent area.

Coal Resource and Geologic Information Maps

Geologic information is provided on Drawing C9-1213-R. Drill hole information for the loadout facility is presented on E-93428, 1 of 4 through 4 of 4. Information on depth of alluvium can be located in 612a certified by David Hanson on June 9 1995, Registered Professional Engineer in the State of Utah.

Cultural Resource Maps

No cultural resources were identified in the permit or adjacent area.

Existing Structures and Facilities Maps

Structures located within 100 feet of the Price River are located on Drawing E9-34306. The permittee has provided existing surface facilities on E9-3341. The as built haul road is provided on Drawing 4067-6-9A. And is certified by Louis G. Manwaring a Registered Professional Engineer in the State of Utah.

Existing Surface Configuration Maps

The Permittee has provided an accurate representation of the natural slopes which reflect geomorphic differences, as presented on F9-177, (1 of 2 and 2 of 2) and on G9-3504 as well as other maps.

Mine Workings Maps

There are no mine workings in the permit area.

Monitoring Sampling Location Maps

Drawing E9-3451 shows the monitoring locations for the operational phase monitoring.

Permit Area Boundary Maps

The permit area boundary map is shown in Exhibit E9-3341, certified on 11/10/94 by Gregory J. Poole, a Registered Professional Engineer in the State of Utah. Other maps are not represented with the permit area boundary as identified in the issued permit. The railroad right of way previously shown on Exhibit E9-3341 was removed. Areas previously described as future topsoil salvage areas and previously leased areas within the permit area

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(Costal Corporation, and Utah Power and Light) were not retained from Exhibit E9-3339. New topsoil borrow areas are identified on Exhibit G9-3511, which also shows the proposed extent of the disturbed area during reclamation.

Surface and Subsurface Ownership Maps

Surface ownership information is provided on E9-3341A. No subsurface ownership maps are presented since no underground mining will occur.

Subsurface Water Resource Maps

Information on groundwater monitoring wells and surface water information collected in January and May of 1990 can be located on Drawing G9-3510 and was certified by Louis G. Manwaring, a Registered Professional Engineer in the State of Utah. Other information on subsurface water can be found on Exhibit 712d and E9-3451. The track hopper water source is located on Exhibit E9-3341. The Permittee states the diversion structure on the Price River is located on Exhibit E9-3430. This structure is shown in cross section A, which in turn is located in plan view on the upper right hand corner of Exhibit E9-3430. For additional clarification purposes the location of the river diversion structure is also found on Map 712d.

Surface Water Resource Maps

Watersheds are delineated on Drawing 3504. This map is not certified. The water rights are located on Drawing G9-3507. A new certification was not included. A note was added to this map and the search radius changed from the original certification. Certifications should be dated following updates and changes to the maps although the changes presented are minor.

Vegetation Reference Area Maps

Vegetation Reference area maps are included in E9-3443 "Vegetational Study Map - C"; E9-3345 "Vegetative Types and Plant Communities"; F9-178,179 "Vegetative Study Map"; and G9-3506 "Proposed Test Plot Irrigation System".

Well Maps

Information from the Ferron Sandstone is obtained from old oil exploration well logs. These wells are outside of the permit area. Other well information is provided on G9-3507 and Drawing G9-3510.

Contour Maps

Reclamation contour maps are provided on Sheet No. E9-3342 (1 of 2 and 2 of 2).

Findings:

This section is determined complete.

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OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

General Operations

The Wellington preparation processing plant began operations in 1958. Mining operations consist of a preparation plant only: No insitu surface coal mining or underground coal mining occurred at this site. The total disturbed area associated with the preparation plant is 392 acres. The Processing Plant historically has received coal from the Somerset Mine in Colorado and operated as a coal cleaning plant until 1985. It is estimated the plant received from 1.5 to 1.8 million tons of raw coal, shipped 1.2 to 1.5 million tons of clean coal by rail, and disposed of approximately 300,000 tons of refuse annually (1984 Technical Analysis).

Coal processing waste or "refuse" was disposed of in two locations. Coarse refuse was disposed of in the Plant Refuse Pile while fine refuse was slurried through the pipeline to the slurry impoundments located east of the Price River. Slurry was pumped and transported via the fine slurry refuse pipeline, identified on the Facilities map (E9-3341), to the upper slurry cell where fine materials settled out. The partially clarified slurry water then passed to the lower slurry cell where additional fines settled from the slurry water. The remaining processing water passed through the Clear Water Pond before being returned to the processing plant. Additional water needed for processing was pumped from a well completed in the alluvium adjacent to the Price River. (excerpted from the 1984 Technical Analysis).

Type and Method of Mining Operations

The Wellington Preparation Plant was used for storage, screening and loading trains when purchased by Genwal Coal Co in August, 1989. At full production approximately 500,000 tons per year of coal is handled. Coal is separated into as many as four products from crushed at a minus 1 or minus 2 mesh to Oiled Stoker Coal.

In section 7.28 the PAP states "No cleaning or processing of the coal is planned or presently anticipated. No production of fine or coarse refuse is anticipated from the operations". In this section the Permittee is considering processing as "coal cleaning". This conflicts with the information in Section 5.28. which indicates coal is processed by crushing and screening. For clarification, crushing and screening is considered processing.

Facilities and Structures

Existing and previous uses of structures at the Wellington Preparation Plant are discussed in Sections 5.26.

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All Facilities and structures are located on E9-3341. The Permittee has also shown the location of the Septic Tank and Drain Field in the area north of the coarse refuse pile near the railroad spur on E9-3341. The Permittee indicates the location of the tank and drain-field were obtained from Drawing E9-1296 from earlier submittals. The Permittee stated the exact location was difficult to obtain from the original map.

Findings:

The Permittee has met the requirements of this section. However, the Permittee should clarify the discussions about the current coal processing operations in Sections 7.28 and 5.28 .

EXISTING STRUCTURES

Regulatory Reference: 30 CFR Sec. 784.12; R645-301-526.

Analysis:

A construction history form indicates the Plant Coarse Refuse Pile was started in 1958: the slopes exceed 2:1 in an area where no impounded water can occur to cause failure. The over steepened section is adjacent to the railroad spur right-of-way, leased from the land owner to the railroad. Where refuse pile slopes are greater than 2:1, they must meet MSHA 77.215 (h) requiring approval for the steepened slopes. An approval letter for the plant refuse pile was not provided in the MRP. The approval must be incorporated into the MRP. If approval was not granted, according to R645-301-536.100, the disposal facility will be designed using current prudent engineering practices; be designed to be stable; and meet design criteria established by the Division.

This structure does not meet all performance standards and regulatory requirements. Although this structure existed pre-law, no exemption can be granted since exemptions do not apply to existing coal mine waste disposal facilities, R645-100-431. Additionally, the applicant has used a portion of the facility in connection with coal mining and reclamation operations.

No other existing structure exemptions have been granted by the Division. All structures must meet the applicable regulatory requirements.

Findings:

No exemptions were granted by the Division for Existing Structures at this site. The permittee has not met the requirements of this section for the existing Preparation Plant Coarse Refuse Pile. In order to be in compliance the permittee must complete the requirements of NOV 95-39-2-2.

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PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR Sec. 784.17; R645-301-411.

Analysis:

No listings of Public Parks and Historic Places were noted in the permit area and no additional operation requirements were identified. See the discussion under " HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION" of this T.A.

Findings:

The Permittee was determined to meet these requirements in the State Decision Document on August 22, 1984. The approval is based on the Division of State History documents dated September 24, 1981 and January 19, 1984.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR Sec. 784.18; R645-301-521, -301-526.

Analysis:

The Ridge Road, a county road, which crosses north of the permit area was constructed beginning 1989 and was completed in 1990. The Permittee has not relocated a public road. However, the permit area is within 100 feet of the Ridge Road. Reclamation activities will occur within 100 feet of this road. Carbon County has provided a memo to NEICO to indicate the county has no objections to reclamation work that may occur in proximity of "a" county road.

The PAP indicates the county maintains the Class I Haulroad to the Wellington site (Ridge Road) and maintains the County Road on the east side of the Price River (Section 5.27). All other ancillary roads are maintained by the Operator.

No information pertaining to use or County Maintenance of the road on the east side of the Price River could be found. A letter from Carbon County committing to road maintenance is included in Appendix G. However this commitment discusses the maintenance of the Ridge Road to the Washer Plant property boundary. No mention of land within the permit area or adjacent to the permit area (100 feet of the permit area) was discussed. An additional memo from the County was presented to Candy Manzanares of Genwal Coal Co. on June 12, 1991 to respond to a April 18, 1995 request for information from the Division regarding roads. This memo only discusses maintenance of the Ridge road and refers to a county road between the tailings pond and Highway 6. However, the road in question is not between the tailings pond and Highway 6. Additionally, this memo has no authorizing signature.

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Statements clarifying the road status as a public road must be incorporated into the permit. Specifically the Ridge Road appears to be the only public road discussed in the County Memos and is the only road with clear identification on the Permit Area Facilities Map E9-3341.

It is recommended the Permittee refer to the April 18, 1991 memo from the Division requesting information on roads, and that applicable sections be incorporated into the permit.

Findings:

The Permittee must provide the following in accordance with the requirements of:

R645-103-234.100, the necessary approvals (with signatures) for each road clearly specifying which roads are approved (for mining operations within 100 feet of the right-of-way) by the authority with jurisdiction over the public road.

R645-301-120, clarification for the existing public roads and a description in the text of the MRP. All public roads, including the road between the tailings pond and the Price River, must be presented clearly on a map (Exhibit E9-3341).

R645-301-526.116, a description of the measures to be used to assure the public and land owner interests are upheld for **all** affected county roads which are within 100 feet of mining and reclamation activities. Each applicable road should be specifically addressed.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.26, 817.95; R645-301-244.

Analysis:

The Wellington Preparation Plant operates under an Approval Order from the Utah Division of Environmental Health, Bureau of Air Quality, issued December 29, 1989. The plan includes copies of an updated Approval Order issued October 28, 1992. It is not clear whether this Approval Order includes the proposed removal of fines. This section also contains narrative on facilities and methods used to control air pollution.

Findings:

The Permittee is considered to meet the requirements of this regulation. Further clarification of the Air Quality Order and applications to fines processing may be available at the minesite.

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COAL RECOVERY

Regulatory Reference: 30 CFR Sec. 817.59; R645-301-522.

Analysis:

This operation is considered a processing plant and does not operate an underground mine or surface mine at this time. Therefore, this section is not applicable to operations at this site.

Findings:

The Permittee is considered to be in compliance with this section.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

There are no underground mining activities on the site nor are any anticipated. Subsidence from underground mining would not occur on this site.

Findings:

The Permittee is considered to be in compliance with this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

Section 515 could not be found within the plan. A discussion was found under Section 5.14 addressing impoundment hazards. The Permittee did commit to follow the actions outlined in 30 CFR 77.126-3 however, these requirements vary from those identified under R645-301-515. The potential for slides at this site is low, since this site is essentially level. However this regulation addresses other damage as well. This section must be addressed.

Findings:

The Permittee must provide the following in accordance with the requirements of:

R645-301-515, the commitments for slides and other damage as required by this regulation.

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FISH AND WILDLIFE PROTECTION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-333.

Analysis:

The fish and wildlife plan in Section 3.33 includes several measures recommended by Wildlife Resources. These include employee education about impact avoidance and mitigation, minimizing fugitive dust and sediment yield, maintaining instream flows in the Price River as far as possible, avoiding disturbance to riparian habitat, preventing wildlife use of ponds or other potentially hazardous areas, and protecting certain critical habitat areas. The Permittee will promptly report the existence of any threatened or endangered of which it becomes aware.

The plan contains an April 8, 1992, letter from the Fish and Wildlife Service concerning power lines in the area. It says the lines do not conform to raptor protection specifications, but they did not recommend modifications because they are not being used by raptors.

Findings:

The PAP complies with regulatory requirements of this section.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-232, -301-233, -301-234, -301-242, -301-243.

Analysis:

A summary of information found to be pertinent to reclamation measures as reported in the 1986, 1987 and 1989 and annual reports and is discussed in the following paragraph. Other measures deemed to be important to reclamation success based on vegetation plot information are also discussed below.

In the 1986 annual report a reclamation treatment description included 2 Tons of hay amendment incorporated into the soil prior to seeding/fertilization/and mulching. This treatment appeared to provide successful results in reclamation on some of the areas contemporaneously reclaimed in 1986 (see map attached to 1986 Annual Report). In the 1987 Annual Report analysis of the soil materials from the fine slurry and coarse slurry test plots displayed very erratic SAR values within the test plots. In the 1989 Annual Report, chemical analysis of the native soils (locations shown on Drawing 4067-6-8 B) indicate that below two feet, the soils are fine textured and sodic. The recommendation for topsoil salvage was 6 inches (0-15 cm) along the access road and the screening facility.

An organic amendment was used on the slurry and refuse testplots. Information on the type of organic matter application, the depth of incorporation and the amount of

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fertilization is lacking. The Division is unable to reach a conclusion on the appropriateness of the organic matter treatment for the site. No advantage was apparent in the 1990 evaluation of these test plots, but the value of organic matter was assessed in terms of shrub establishment and not its other values such as lowering soil temperature, increasing soil moisture and improving tilth.

A reclamation treatment which should be utilized at Wellington Preparation Plant is the incorporation of organic matter into the soil prior to seeding and fertilizing. The benefits of organic matter addition are: increased water holding capacity; improved structure; increased fertility (depending upon the type of OM); adsorption of soil salts; improvement or micro-organism population etc.

Vegetation test plots at Wellington have revealed that water capturing strategies will aid plant establishment in this harsh environment. The Division strongly recommends that an organic amendment is incorporated into the soil prior to seeding. The Division would also support experimentation with dried, digested sewage sludge as a source of structure- building fertilization for the refuse, slurry, and surface facilities area reclamation.

The addition of gypsum to localized sodic areas has been discussed within the plan. The possibility of using gypsum as a soil amendment will depend upon the exchangeable sodium found within the soil. After seedbed preparation, the soil will be sampled for fertility and toxicities (Section 3.41). The MRP should outline final reclamation sampling for fertility and soil amendments as follows: frequency (number of tests and spacing of tests within each acre); depth of sampling; and type of sampling (composite or depth segregated).

The reclamation plan calls for the use of topsoil and substitute material. An estimated total of 5,553 yd³ has been salvaged and stored on site (page 3, Section 2.31). Topsoil (stockpile #1 and #2) recovered during haul road construction amounted to 1,526 cubic yards, and topsoil from the pad area (stockpile #3) was 1,537 cubic yards. A survey of topsoil recovered in Stockpile storage area #4 is included in Appendix F and is estimated to be 2,490 cubic yards.

No topsoil borrow is proposed to be used at the main plan area. It is not clear whether the existing topsoil piles recovered from the main plant area will be used to replace topsoils from post-law disturbed areas. Six inches of borrowed topsoil is proposed for the pumphouse area, and four feet of topsoil substitute would be placed over the (Plant) Coarse Refuse Pile, the Upper Slurry Pond, the Lower Slurry Pond and the Coarse Slurry (Slurry Pond) areas. The areas with 4 feet of cover were determined to have undesirable characteristics and toxic forming potential.

Native soils in the area are limited for their use as topsoil borrow material. New borrow areas proposed for final reclamation are discussed in the Section "Topsoil and Substitute Requirements". Topsoil borrow areas have been identified on Drawing E9-3341. Further topsoil borrow areas are shown on Drawing E9-3339. Currently the proposed Topsoil Borrow areas are Area "A" and area "E" identified on Sheet G9-3511.

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Additional areas would also be suitable for borrow according to the Permittee. A potential future alternative posed in the PHC is to use Area "G" to cover the Coarse Slurry; use Area "D" to cover the Slurry Ponds; Use Area "B" to cover the Coarse Refuse and Area "A" could be used to supplement as a final seed bed medium. If available data is not found to be adequate, further testing of these areas could be necessary to demonstrate that the Permittee is using the best available material. Additionally bond adjustments for transportation may also be necessary.

The sampling conducted and reported in the 1989 Annual Report went to a four foot depth. A deeper excavation was investigated for Borrow area "A" in 1995.

The specific pedon descriptions from the soil borrow material investigation 1995 for Borrow area "A" are summarized below:

1. NEICO-1, Ravola silty clay loam, 1 to 3% slopes, is a deep soil of fine silty, mixed (calcareous), mesic Typic Torrifluvent. The 12 inch plow layer has a silty clay loam texture. Below the plow layer to a depth of 52 inches is a stratified silt loam < 2% rock fragment. Between 52 and 59 inches is a finer lens with an EC value of 4.3, high enough to be considered saline. A clay stratum exists between 72 and 91 inches. This area is considered moderately well drained and is the only variance from the Ravola series characteristics. Assuming that 1.5 feet of soil material is left for suitable growth material, salvage to 72 inches is available.
2. NEICO-2, Billings silty clay loam, 1 to 3% slopes is a fine-silty, mixed, calcareous, mesic Typic Torrifluvent. It has higher EC and SAR values below the silty clay loam surface layer. From 12 to 29 inches the soil has an EC of 12.9 and SAR of 11.7. This increases to an EC of 13.6 and SAR of 13.2 at 29 to 50 inches. NIECO 2 is considered saline below the surface layer with the 50 to 85 inch depth saline-alkaline. The 50 to 85 inch depth exhibits a slightly unsuitable SAR of 16.1, which should dilute upon salvage and natural soil mixing. The entire profile could be salvaged to 100 inches in the vicinity of NIECO 2. SCS use rating as a topsoil is rated fair: too clayey, excess salt.
3. NEICO-3 - Billings silt loam, 1 to 3% slopes, NIECO 3 is considered saline below 24 inches in the profile. Below 38 inches the EC and SAR values are rated poor. No unsuitable values were encountered. About 122 inches of soil was considered suitable for salvage, with the lowest horizon between 73 and 140 inches having a clay texture. SCS use rating as a topsoil is rated fair: too clayey, excess salt
4. NEICO-4 - Billings sandy loam, 1 to 3% slopes, is a fine-silty, mixed, calcareous, mesic Typic Torrifluvent. NEICO 4 is similar to NEICO 2 and 3 and also has a high EC and SAR value between 7 and 42 inches, and a saline-alkaline layer between 22 and 42 inches. This site has a high unsuitable

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Selenium value at 22 to 42 inches. If the unsuitable Selenium SAR and EC values would dilute upon mixing to an acceptable level then the entire profile to 96 inches would be considered suitable for salvage. SCS use rating as a topsoil is rated fair: too clayey, excess salt.

5. NEICO-5 - Moffat loam, 1 to 6% slopes, is a coarse loamy, mixed, mesic Typic Calciorthid. A calcic horizon exists between 16 and 32 inches. Shale bedrock was encountered at 123 inches. Soil pH are poor (8.7, 8.9) below 16 inches. A depth of 105 inches was considered suitable for salvage. This site has more rock fragments than other areas. SCS use rating as a topsoil is rated fair: small stones.
6. NEICO-6 - Greybull, deep silty clay loam, 1 to 6% slopes, is a fine loamy, mixed, mesic Typic Torriorthent. A gravelly silt loam exists between 43 and 93 inches. A cobbly loamy sand lens was encountered at 93 inches. No limiting factors were determined for this area and 75 inches are considered suitable for salvage. SCS use rating as a topsoil is rated fair: area reclaim, thin layer.
7. NEICO-7 - Gerst, moderately deep, gravelly loam 10 to 40% slopes, has 33 inches of soil above Mancos shale bedrock. The pH (8.7, 8.5) value, and SAR (11.5) were poor between 7 and 18, and 7 and 33 inches respectively. Weathered Mancos shale was encountered at 33 to 39 inches with a poor EC (11.6). At 69 to 84 inches the soils was saline. A 15 inch depth was considered suitable for salvage. SCS use rating as a topsoil is rated poor: area reclaim, small stones, slopes.

Reclamation concerns for soil salvage include the following in Topsoil Borrow area "A"; Clay stratum exists below the 72 inch depth and the resulting change in depth of soil to 1.5 feet may change the reclamation feasibility of the borrow area to meet postmining land use and farming production criteria. It is necessary to provide a method which demonstrates to the Division that the resulting soil medium is equal to, or more suitable for sustaining vegetation on nonprime farmland areas than the existing topsoil for the topsoil borrow areas. It may be necessary to include a demonstration that the change in depth to the water table and changes in salt accumulation will not affect the capability of the soil to meet vegetative requirements.

Soils of high EC values and salt accumulations may influence reclamation of the site where used as topsoil application and where retained at the borrow area. Salt accumulations will move within the soil profile and may vary according to seasonal variability and moisture availability. Both the borrow area and reclamation site may need special mixing and handling requirements to assure adequate dilution of the soil EC and SAR.

Borrow area "E" is identified as Ravola Slickspots Complex. 70 % Ravola Loam (alkali), 20 % slickspots, and 10 % Billings. (Read previous description under "SOILS RESOURCE INFORMATION") The SCS rating for using this soil as a topsoil is rated fair:

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excess salt. The reclamation concerns for Borrow area "E" include identifying the extent of the slickspots and excluding their use as a substitute material. Handling practices for the substitute materials and soil cover for insitu slick spots occurrences may be necessary if they are extensive enough to affect revegetation success in the borrow area. Determining the alkalinity and salts present and the usable portions of the substitute materials for distribution is necessary.

The Permittee has provided identification of materials for proposed borrow site "A". In order to meet the requirements of R645-301.224, R645-301.233, and R645-301.233.100, the Permittee has committed to the following:

1. Provide a soils field investigation on Topsoil Borrow area "E" in April of 1996 to identify the extent of slick spots and soil phases that are high in clay and sodium, (as well as other problem areas).
2. Demonstrate suitability of Topsoil Borrow Area "E" for use as a topsoil substitute.
3. The includes timing and methods to provide adequate soil survey information for the proposed Borrow area "E."
4. Committed to conduct a profile analysis immediately prior to salvage through monitoring E.C., pH, and SAR in topsoil borrow areas "A" and "E" which is adequate to determine the location and amplitude of salt accumulations and determine a handling plan which assures soils will meet the dilution necessary to meet acceptable standards.
5. Committed to provide an analysis by May 31, 1996 which demonstrates the remaining soils suitability for the postmining land use.

Findings:

With the submitted commitments the Permittee is determined to meet the intent of the regulatory requirements for this section.

INTERIM REVEGETATION

Regulatory Reference: R645-301-331.

Analysis:

Disturbances will be limited to those areas where permitted and necessary for efficient operations. Interim revegetation will be done when disturbed areas are not needed for further operations. These will be reclaimed and seeded at the first appropriate season following the methods in the reclamation plan.

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Specific areas and specific timing of reclamation were not discussed although, interim revegetation is developed to pertain to the outslopes of roads and other small areas.

Findings:

The Permittee has met the minimum requirements for this regulation.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Systems

Primary roads are identified as 3,700 feet of haul road, from the property boundary to the load-out facility and joins a county spur road used to access borrow pits. The spur road then joins the Carbon County Ridge Road. "As-built" design information is incorporated through a December 21, 1989 submittal and is considered part of the permit. During construction a 30 foot base was bladed for the load-out haul road. The primary haul road is 24 feet wide and has a grade from 2.4 % to 2%. Side slopes are 4:1. The Permittee should incorporate applicable portions of the "As-built" in the main text for clarity.

The Permittee indicates primary roads are surfaced with rock, crushed gravel and asphalt or other material, and are routinely maintained. The Permittee should include discussion of the specific surfacing for each primary road. Drainage ditches run parallel to the haul road on the uphill side. Non-acid non-toxic forming substances were used in the haul road construction.

In the PAP Ancillary Roads are stated to be unimproved with a top cover of coal cleaning waste used when necessary for stability. This statement does not meet the regulatory requirements unless the Permittee can demonstrate the material to be applied is non-acid and non-toxic forming.

The Permittee has not discussed how other roads meet the requirements of ancillary roads. The road adjacent to the slurry operations is proposed to be retained as a permanent road. It is used frequently (required for weekly MSHA inspection) and is used for more than a 6 month duration. Road surfacing should be adequate to provide access during the required inspection periods. Clarification of the road access to the slurry ponds is necessary.

Other Transportation Facilities

Additional transportation includes the railroad. In Section 5.21, the Permittee states most of the rail system is outside the permit area. In fact the rail is in the permit area but a portion is outside the disturbed area. A portion of the rail system is utilized by CVR to load rail cars, and is directly related to coal mining operations. According to text, the rail system

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right-of-way is shown on various drawings such as E9-3343. However, the Permittee has not provided an accurate reference. The portions belonging to the railroad were clearly marked on Exhibit E9-3342 (1 of 2, revised June 1995). The Permittee has leased a right of way through their property to the railroad. The Permittee indicates a copy of the easement agreement with the Denver and Rio Grande Western Railroad is attached to Appendix J. The easement agreement with the Denver and Rio Grande Western Railroad attached to Appendix J was not found in this section of the plan.

Findings:

The Permittee must accomplish the following in accordance with the requirements of:

R645-301-120, clarify the statement in Section 5.21 which states " ...most of the rail system is outside of the permit area". Correctly reference the exhibit showing the railroad right of way. Provide the correct reference or provide the referenced documentation (easement agreement with the Denver and Rio Grande Western Railroad attached to Appendix J)for the railroad right of way.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal of Noncoal Waste

In Section 528.300 the applicant states "The Noncoal waste is temporarily stored then hauled to an appropriate land fill." Map E9-3341 provides the facilities map and shows the existing structures, an oil storage area, fuel storage building, and the non-coal waste storage area. The Permittee did remove a PCB containing transformer from the pumphouse site in 1992.

The Permittee committed to move existing gasoline and diesel tanks and any contaminated soil found beneath the tanks using proper disposal prior to constructing concrete containment structures. The Permittee has removed these tanks but, no sample identification of the soils beneath the tanks is known to be completed. The Permittee's proposal describes several scenarios for proposed containment structures. Following construction the "as-built" design(s) should be included with the designs for the proposed 2" steel pipe with valve and screw cap and 4" concrete filled pipes for drain protection.

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The Permittee has included a commitment to dispose of concrete materials two feet below the reclaimed surface elevation in the reclamation plan timetable. Disposal information during reclamation for noncoal waste can be found in Section 5.40.

Coal Mine Waste

The Permittee previously disposed of coal mine waste at two general locations. The Preparation Plant south of the Price River and the Slurry Impoundment Basins North of the Price River. The Preparation Plant coal mine waste disposal site is referred to as the Preparation Plant Refuse Pile. The Slurry Impoundment Basins are separated into the following sections; the Coarse Slurry Refuse Pile, the Coarse Slurry Pond (upper refuse impoundment), and the Fine Slurry Pond (lower refuse impoundment). The Coarse and Fine Slurry Ponds are currently inactive and may have potential future resource use.

The Preparation Plant Refuse Pile is not in its final configuration at the time of this T.A. It is approved to receive pond cleanout wastes from the Crandall Canyon Mine. Mines generally clean out their ponds after three or more years of use.

Coal Mine Waste: *Refuse Data Analysis and Interpretation*

Table 2-11 and 2-12 contain the results of the soil and refuse sampling programs conducted in December, 1990 and April, 1994, respectively. It must be noted that at no time has the slurry, coarse slurry or coarse refuse been sampled to their full depth. No monitoring wells exist or are completed within the slurry pond area. Therefore water quality emanating from the slurry ponds can only be interpreted from the refuse data presented.

Two sample pits (eight depth segregated samples) were excavated in the Coarse Refuse Pond Refuse Pile (i.e. coarse slurry) and sampled down to eight feet (sample depth intervals: 0-1'; 1-2'; 2-3'; 4-8'). AB-DTPA extractable Selenium concentrations range from 0.08 mg/Kg - 0.52 mg/Kg and averaged 0.20 mg/Kg. Hot Water Extractable Boron concentrations ranged from 2.5 mg/Kg - 3.39 mg/kg and averaged 2.9 mg/Kg. Saturated Extract Electrical Conductivity (EC_s) ranged from 2.45 mmhos/cm - 8.00 mmhos/cm and averaged 5.28 mmhos/cm. Sodium Adsorption Ratio (SAR) ranged from 0.47-6.01 and averaged 2.32. Saturation Percent ranged from 21.8 % - 29.52 % and averaged 25.66 %.

Two sample pits (nine depth segregated samples) were located in the Plant Coarse Refuse Pile (i.e. coarse slurry) and sample down to eight feet (sample depth intervals: 0-1'; 1-2'; 2-3'; 4-8'). AB-DTPA extractable Selenium concentrations range from 0.06 mg/Kg - 0.19 mg/Kg and averaged 0.10 mg/Kg. Hot Water Extractable Boron concentrations ranged from 1.5 mg/Kg - 3.37 mg/kg and averaged 2.55 mg/Kg. Saturated Extract Electrical Conductivity (EC_s) ranged from 2.4 mmhos/cm - 14.00 mmhos/cm and averaged 7.08 mmhos/cm. Sodium Adsorption Ratio (SAR) ranged from 8.77 - 86.34 and averaged 32.37. Saturation Percent ranged from 27.73 % - 40.36 % and averaged 31.91 %.

Two separate sample programs were conducted on the Slurry Pond Basin Area, one in December of 1990 and a more extensive program in April, 1994.

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In December of 1990 two pits (28 depth segregated samples) were sampled to a depth of thirteen feet (sample depth intervals: 6-12" and one foot intervals thereafter). AB-DTPA extractable Selenium concentrations range from 0.15 mg/Kg - 0.57 mg/Kg and averaged 0.32 mg/Kg. Hot Water Extractable Boron concentrations ranged from 1.54 mg/Kg - 10.49 mg/kg and averaged 4.97 mg/Kg. Saturated Extract Electrical Conductivity (EC_e) ranged from 1.85 mmhos/cm - 6.4 mmhos/cm and averaged 3.3 mmhos/cm. Sodium Adsorption Ratio (SAR) ranged from 1.26 - 7.99 and averaged 3.84. In both sample pits Boron concentration and EC_e were highest in the upper six inches.

In April of 1994 six pits (30 depth segregated samples) were located in the Slurry Pond Basin Area (i.e. slurry ponds) and sampled down to eight feet (sample depth intervals: 0-1'; 1-2'; 2-3'; 4-8'). AB-DTPA extractable Selenium concentrations range from 0.02 mg/Kg - 0.30 mg/Kg and averaged 0.15 mg/Kg. Hot Water Extractable Boron concentrations ranged from 3.34 mg/Kg - 26.74 mg/kg and averaged 7.61 mg/Kg. Saturated Extract Electrical Conductivity (EC_e) ranged from 1.46 mmhos/cm - 9.5 mmhos/cm and averaged 3.8 mmhos/cm. Sodium Adsorption Ratio (SAR) ranged from 1.22 - 6.74 and averaged 3.98. Saturation Percent ranged from 43.74 % - 92.3 % and averaged 63.54 %.

In six out of six pits (top eight feet) Boron concentration was highest in the upper one foot. Boron concentration averaged by depth interval were as follows: 0-1' = 13.80; 1-2' = 6.99; 2-3' = 5.71; 3-4' = 6.08; 4-8' = 5.45.

In six out of six pits (top eight feet) nitrate(NO_3)-nitrogen concentration was highest in the upper one foot. nitrate(NO_3)-nitrogen concentration averaged by depth interval were as follows: 0-1' = 5.75; 1-2' = 1.65; 2-3' = 1.74; 3-4' = 1.72; 4-8' = 1.61.

In four out of six pits (top four feet) EC_e was highest in the upper one foot. EC_e averaged by depth interval were as follows: 0-1' = 4.29; 1-2' = 3.08; 2-3' = 3.04; 3-4' = 3.69; 4-8' = 5.14.

Multiple regression analyses were conducted on the thirty sample collected in April 1994. Comparisons between the various constituents of concern (i.e. EC_e , Hot Water Extractable-Boron, AB-DTPA Extractable Selenium, nitrate(NO_3)-nitrogen, sample depth interval) were conducted for each separate pit, each depth interval and total sample set. Data indicates that mobilization of salts in the soil profile are present.

The following correlations coefficient of $r^2=0.50$ or greater were noted. Normality tests were not conducted and adequate sample size determination were not accomplished. (Slurry Pond Sample Pit-# will be denoted as SP-#).

SP-1: Boron/nitrate-nitrogen $r^2=0.82$
Depth/Boron $r^2=0.59$
Depth/Selenium $r^2=0.60$
SP-2: Boron/nitrate-nitrogen $r^2=0.98$
Depth/ EC_e $r^2=0.73$
SP-3: EC_e /Boron $r^2=0.93$

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EC_e/Selenium $r^2=0.72$
EC_e/nitrate-nitrogen $r^2=0.96$
Boron/Selenium $r^2=0.78$
Boron/nitrate-nitrogen $r^2=0.94$
Selenium/nitrate-nitrogen $r^2=0.60$
SP-4:EC_e/Boron $r^2=0.56$
Boron/nitrate-nitrogen $r^2=0.56$
Selenium/nitrate-nitrogen $r^2=0.54$
Depth/EC_e $r^2=0.85$
Depth/Boron $r^2=0.87$
SP-5:EC_e/Selenium $r^2=0.77$
Boron/nitrate-nitrogen $r^2=0.83$
Depth/EC_e $r^2=0.82$
Depth/Selenium $r^2=0.72$
SP-6:EC_e/Boron $r^2=0.93$
EC_e/Selenium $r^2=0.61$
Boron/nitrate-nitrogen $r^2=0.62$
Depth/nitrate-nitrogen $r^2=0.51$

Depth Interval 0-1':EC_e/Boron $r^2=0.50$
EC_e/Selenium $r^2=0.81$
Depth Interval 1-2':Boron/Nitrate-nitrogen $r^2=0.84$
Depth Interval 2-3':EC_e/Boron $r^2=0.76$
Boron/Selenium $r^2=0.61$
Selenium/nitrate-nitrogen $r^2=0.69$

The Permittee's topsoil cover proposals are identified below by area:

1. Surface Facilities Area:

No topsoil applied.

2. Coarse Refuse Pond Refuse Pile (i.e. coarse slurry pile):

Cover with at least four feet of topsoil or "other suitable material". However in Section 5.42.2 thru 5.42.7.42 BACKFILLING AND GRADING (revised 11/10/94) the Permittee commits to covering the Coarse Refuse Pond Refuse Pile with "48 inches of top soil [sic]".

3. Plant Coarse Refuse Pile:

Cover with at least four feet of "material". However in Section 5.42.2 thru 5.42.7.42 BACKFILLING AND GRADING (revised 11/10/94) the Permittee commits to covering the Plant Coarse Refuse Pile with "48 inches of top soil [sic]".

4. Coal Storage and Processing Area:

Cover with six inches of borrow area soil.

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5. Slurry Pond Basin Area:

Soil may be ripped.. "little ripping may be needed because so much of the area will be unconsolidated with the addition of material i.e. coarse slurry and topsoil". Cover with 4 feet of borrow area soil.

Refuse Piles

Plant Refuse Pile Operational Phase

Refuse piles must meet the requirements for coal mine waste, and the requirements of 30 CFR Sections 77.214 and 77.215. The Permit contains an MSHA report for the plant refuse pile, dated April 23, 1976. The report is located in the Hydrology Appendix Volume II under the "As-built Specifications, Designs, Approval letter, and Other Information for Coal Refuse Piles and Impoundments". This inspection report indicates compaction of refuse was completed in 5' lifts with surface graded at 3% from the crest and 2:1 side slopes.

A construction history form indicates; the refuse pile was started in 1958; and slopes exceed 2:1 in an area where no impounded water can occur to cause failure. The over steepened section is adjacent to the railroad spur right-of-way, leased from the land owner to the railroad.

A stability analysis was conducted on the plant refuse pile in Appendix H and was certified by Douglas R. Hawkes a Licensed Professional Engineer. The analysis assumes that drainage will be provided on and around the refuse pile by sloping the top of the pile to drain, no water will be allowed to build up in the refuse material and the maximum height of the pile will be 50 feet. The engineer concluded, the refuse pile in its present condition, has a factor against failure through the foundation soils of greater than 1.5, and the safety factor against failure through the refuse pile of approximately 1.1. Refuse slopes of 1.4H:1V to 2H:1V have a safety factor against failure greater than 1. Failure through the refuse would be shallow failures of the exterior steep slopes and would not jeopardize the overall stability of the refuse pile..

Where refuse pile slopes are greater than 2:1, they must meet MSHA 77.215 (h) requiring approval for the steepened slopes. An approval letter for the plant refuse pile was not provided in the MRP. The approval must be incorporated into the MRP. If approval was not granted, according to R645-301-536.100, the disposal facility will be designed using current prudent engineering practices; be designed to be stable; and meet design criteria established by the Division.

The operational sediment control measures include: drainage to the Plant Sediment pond presented in the Hydrologic Appendix, Watershed #5; and treated by ASCA #3 for the East, West, and south slopes. Ditch UD1A provides a diversion around the refuse pile which was previously determined adequate to transport the 100 year 6 hour event.

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Waste will be placed in a maximum of 8 inch lifts and allowed to dry to within 2% of optimum soil moisture and compacted by rubber tired construction equipment to achieve a minimum of 90% Standard Proctor.

R645-301-514.200, requires the applicant to conduct regular inspections during placement and compaction of coal mining waste. By definition sediment pond waste is considered coal mining waste. The Applicant will be expected to adhere to this regulatory requirement.

Additionally the applicant has not provided certified designs as required by R645-301-536.

Plant Refuse Pile Reclamation Phase

The proposed final configuration of the refuse pile does not include an underdrain. For the existing and proposed extent (1995 submittal) an underdrain does not appear necessary. The refuse materials are coarse, no seeps or springs are present and site climate and drainage area of the pile does not warrant an underdrain.

The proposed final configuration of the Plant Refuse Pile is based on non-hazardous waste materials received from the clean-out of the sediment pond waste from the Genwal mine. Designs have been provided for the final configuration of the refuse pile as shown on Drawing 536a and in cross sections on Drawing 536b. The proposed side slopes are greater than 2H:1 V. The proposed final configuration will accommodate approximately 10,000 cubic yards of material. The refuse pile will be capped with 4 feet of soil cover to an elevation of 5370 feet or 40 vertical feet from the toe to the top of the pile. The pile will be gouged to enhance revegetation and inhibit erosion (Section 5.36 page 1). No permanent impoundments are proposed on the refuse pile.

The Permittee has presented designs for controlled drainage from the refuse pile for the 100 year 6 hour event for final configuration of the pile and demonstrated that runoff from the pile does not require drainage features. The basis of this design assumes gouging on the top of the refuse pile will be permanent. The problem with this assumption is that the vegetation must be adequate to reduce run off from the surface when the basins are no longer effective. The applicant must provide a demonstration based on the future configuration. The proposed design commingles runoff from the disturbed and undisturbed drainage.

The Permittee indicates on page 57 that the Plant Refuse Pile is included in the quarterly inspections. For construction periods the Permittee committed to inspections when the foundation is extended beyond the existing pile and when final surface drainage is completed. However inspections are also necessary during construction periods.

Impounding Structures

The Permittee indicates that the Coarse Slurry Refuse pile is not a refuse pile but is actually a part of the refuse basin impoundment. However, there is a separate existing MSHA number for this portion of the plan. The Coarse Slurry Refuse Pile is currently

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inactive. This pile was constructed with drag lines from the Coarse Slurry Pond when the pond could not accommodate more waste. Since this site was developed from an impounding structure, the plan for this site does not specifically fit the requirements of R645-301-745.200. Currently any destabilization or erosion from this pile would be deposited in the slurry impoundments. This site, at reclamation, will be regraded. However, the plan does not remove the pile to original ground level, instead the pile is simply regraded and redistributed. At the time of reclamation this site and the impoundments will fall under the definition of coal mine waste.

In reclamation the Permittee proposes to remove the elevated portion of the impounding dikes to a level graded even with the waste piles. The subsurface dikes for the slurry cells are proposed to be left in place permanently. The August 22, 1984 Technical Assessment indicates that the upper refuse dike, the lower refuse dike and clear water dike were constructed of coarse coal refuse prior to SMCRA. According to R645-301-746.311 structures made of or intended to impound coal mine waste may not be retained permanently as part of the post mining land use. The Permittee contends the removal of the structure to grade provides for a free draining (non-impounding) structure at the coarse and fine slurry cells.

In the reclamation phase the impounding structures will be redefined as a refuse pile. The definition of Refuse Pile is a surface deposit of **coal mine waste** that does not impound water, slurry or other liquid or semi liquid material. Coal mine waste means coal processing waste; refer to R645-100. This site will be considered a refuse pile at final reclamation. The reclamation design plan does provide ditch designs for the 100 year 6 hour precipitation event.

Burning and Burned Waste Utilization

The permittee has provided a fire fighting control and evacuation procedure for the preparation plant which was approved and incorporated as Appendix K as part of the stoker coal amendment.

Return of Coal Processing Waste to Abandoned Underground Workings

No coal processing waste will be returned to abandoned underground workings.

Excess Spoil

No spoil material has been or will be developed by mining and reclamation operations at the Wellington site.

Findings:

The Permittee has adequately addressed the cover requirements regarding backfilling of noncoal materials disposed of on site. The Permittee has fulfilled the minimum regulatory requirements for cover by committing to cover the Plant Coarse Refuse Pile, the Slurry Pond

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Coarse Refuse Pile and the Slurry Pond Basin Area with four feet of nontoxic and noncombustible material. However, other requirements of this section require further clarification.

The Permittee must provide the following, in accordance with the requirements of:

R645-301-746.212, a demonstration that the permanent Plant Refuse Pile meets the drainage requirements for the 100 year 6 hour event for the permanent configuration of the pile.

R645-301-514.200, a commitment to conduct regular inspections of compaction of coal mining waste. By definition sediment pond waste is considered coal mining waste.

R645-301-536, certified designs as required by R645-301-512.230.

R645-301-745.200, a copy of the approval letter to clarify the status of the Coarse Slurry Refuse Pile with MSHA. The Permittee considers this as a part of the refuse basin impoundment, however a separate existing MSHA number as a refuse pile exists for this structure. Any additional use of this pile as a refuse pile may require re-permitting according to both MSHA and State regulatory requirements.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

5 and 7.24

General Water Monitoring

Lead, pH and Specific Conductance have been added to the list of laboratory parameters shown in Table 7.24-2 for groundwater, while pH and Specific Conductance have been added to the list of laboratory parameters in Table 7.24-5 for surface water. The total and dissolved forms of Selenium and Boron were added as quarterly sampling parameters in Tables 7.24-2 and 7.24-5 for surface and groundwater sites. The Permittee has included Lead (dissolved) for groundwater, and Lead (total) for surface water baseline parameters and includes pH and Specific Conductance as baseline and operational parameters for ground water, and surface water monitoring. A commitment was made to include comparisons of Boron and Selenium concentrations in water, in the annual reports, as information becomes available. The applicants water monitoring parameters in Tables 7.24-5 and 7.24-2 now follow the Division Guideline and are based on down stream uses and state and federal water quality standards.

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Well GW-2 did not have a cover over the metal casing as observed in the site visit on March 7, 1995. The well in this condition does not meet the requirements of R645-031-731.225. The precipitation which occurred prior to the site visit, probably entered the well and may be the reason for recent (3rd and 4th quarter of 1995) increases of water at the well.

Ground Water data collected in 1987, during coal slurry operations, indicates an increase in Boron concentration occurred between GW-1 and GW-4 and between SW-1 and SW-2. Boron concentrations have exceeded the 0.75 state water quality limit for Class 4 waters. Data representative of current conditions are not available for Boron. In order to determine water quality impacts total and dissolved Boron should be compared for related surface and ground water sites.

Surface Water Monitoring

The following surface water monitoring sites are used to monitor for potential impacts at the Wellington site. SW-1 and SW-2 are used to monitor the Price River above and below the Preparation Plant. SW-3 and SW-4 are in the ephemeral drainage above and below the Siaperas ditch north of the slurry cells. SW-5, SW-6 and SW-7 were set at the inlet and outlets of the slurry cells to monitor changes in quality as water was cycled through the system. SW-8 was to be used to determine water quality utilized and discharged from the preparation plant.

The surface water monitoring stations will be monitored quarterly. However, the Permittee indicated stations would not be monitored during local precipitation events. In Table 7.28-2, monitoring of each surface water station was discussed in terms of the overall value of monitoring each station during precipitation events based upon the program already in place. Clarification was added to Section 7.28-2.

The Permittee proposes that SW-3 no longer be monitored because it is not impacted by the load out. The purpose behind monitoring this site is to describe the waters upstream of the disturbed area and to determine if downstream water quality changes occur from the adjacent slurry cells. This site was described as being located in the Siaperas ditch above the disturbed area (location shown on E9-3451 is poorly placed) and is an ephemeral system. If flow is obtained downstream at SW-4 during an event the data from SW-3 would be of importance to the operator.

SW-4 placed down stream of the Siaperas ditch is stated by the applicant to be poor based on the high natural erosion rates and the potential salt contributions from the Siaperas Ditch. According to the Permittee sampling these areas would put the results in suspect and render them useless in determining impact from the adjacent alternate sediment control area. The purpose of this station is to determine the affects of water contributions from the slurry cells. This channel used to flow intermittently when the slurry operations were conducted at the preparation plant and occurs intermittently at the present time. Water was observed in the Siaperas ditch September 8, 1994 and March 7, 1995. This site should be moved

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adjacent to GW-3 and be monitored at the same time to assist in determining effects of dilution or evaporation on water quality at GW-3.

Monitoring sites SW-5, SW-6 and SW-7 are related to the slurry impoundments at the spillway outlets, SW-7 is subject to NPDES permit requirements. It is unlikely for these sites to flow under the current operation plans. The location of all NPDES discharge points should be provided on the water monitoring map.

SW-8 was monitored at the overflow of the plant water sump. The plan indicates that data from this site is unavailable since 1988 when cessation of operations at the plant eliminated overflow.

SW-2 will be used for sampling water quantity (flow rate) only beginning in 1996. Site 2a will be monitored for water quality at the downstream section below the influence of groundwater flow from the slurry cells.

The Permittee has problems obtaining specific flow data on the Price River. This information is important to determining affects of the Price River on water monitoring well GW-6 and other wells. The Permittee has presented flow values for the Price River Surface Water as being "> 10 cfs" for high flows. On March 7, 1995, a site visit was conducted with Mel Coonrod, Environmental Industrial Services and other Permittee representatives. During the visit it was indicated that flow depths along the weir were actually recorded for dates where flow is reported to (> 10 cfs)". In a phone conversation with Dave Hansen, Hydrologic consultant Hansen Allen and Luce, it was indicated that this information is not available. Flows recorded with a greater than or less than sign may be considered a violation of R645-301-731.222.1. A commitment to submit all field data to the Division and a commitment to provide actual flow measurements must be clearly incorporated into the plan. It was also indicated that a U.S.G.S. gaging station upstream of the site may still provide measured flows. It was requested this information be provided but, none was available. The site also has a stilling well that is no longer operable but could be improved and provide data for determining high flow rates.

Groundwater Monitoring

The Permittee has presented grouping of monitoring stations for comparison purposes for water monitoring analysis in Table 7.28-2. The Permittee has stated that GW-1, GW-2 and GW-3 are grouped together because they monitor undisturbed groundwater quality (since flow is from a northerly direction). However, a comparison of GW-1 and GW-4 and GW-6 provides a better comparison on resulting probable hydrologic impacts in the alluvial waters upstream and downstream of the slurry cells, for the following reasons:

1. Well GW-2 was either completed in a tight clay formation or in shale. It is not likely this well represents timely or accurate alluvial water quality data. Therefore, concentrations due to irrigation water are not likely to be realized at this well and this well should not be used as data to compare alluvial water quality.

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2. Well GW-3 is completed 7 feet into the alluvium and is approximately at the same elevation as the Siaperas ditch. This water may be affected by evaporative influences of the Siaperas ditch. The water quality at GW-3 is influenced by water in contact with the slurry when the water elevation is above 20.6 feet from the top of the casing. (GW-3 may provide an indication of the potential for influences of TDS from the slurry).

No wells are completed in the slurry cells to allow a determination of the impacts resulting from the slurry verses natural background increases. The Permittee has committed to install new wells to replace existing wells GW-3 and GW-6. However, GW-3 and GW-6 provide more information than GW-2. GW2 should be removed and GW-6 should be retained. GW-3 could provide some useful information if information is also gathered from SW-4 at the same time.

The applicant has stated that they will attempt to collect both surface and groundwater samples on the same day. Although the response memo indicates collection will occur the same day the Plan is non-committal. Collection of "same day" surface and groundwater samples may be important at stations SW-2 and GW-6; and at SW-4 and GW-2 and GW-3, since there is a potential connection between surface and groundwater at these stations.

The Permittee has been unable to produce information on the screened interval for the following wells. GW-1, GW-4, GW-5, GW-7, GW-9, GW-10, GW-11, GW-12, GW-13. The Division has requested review of the field notes for the downhole camera investigation and any other well investigation data.

Acid and Toxic-Forming Materials

The determination of the potential for Acid and Toxic forming materials was based on leachate samples from the coarse refuse pile and the slurry refuse basins. The results indicate a high SAR in the Coarse Plant Refuse Pile, and potentially toxic selenium and boron concentrations in the slurry cells.

Coarse Refuse Pile

The high SAR at the Plant Coarse Refuse Pile is not considered leachable: according to the Permittee sodium must be replaced by another cation and with the lack of moisture probably would not be leached downward far enough to affect groundwater. The leachate sample had 1,270 ppm sodium; a basic pH value of 8.4 and TDS 7,040 mg/l. While observed values of water quality data from GW 14 (1985 through 1989) varied from 2,218 to 5,330 mg/l with an average of 3,701 mg/l Sodium; pH values varied from 6.54 to 7.9; and TDS values varied from 8,050 to 17,728 mg/l (the unit mg/l was assumed since the Table 7.24 provides no units). If the leachate and well water were directly comparable it would indicate pH values are the only notable difference. The information provided indicates there would be little potential impact to downstream uses for the sampled constituents.

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The Permittee will cover the Plant Refuse pile with 4 feet of topsoil. The total water holding capacity is expected to be greater than 7 inches. With the average annual rainfall of 8 inches and the average annual (pan) evaporation rate of thirty inches the Permittee does not anticipate the leachate will move through the pile to the underlying groundwater. A soil and water balance accounting was not presented.

Slurry Cells

The Permittee has indicated the evaporative component may be more dominate than the downward component for water migration. With that in mind, the occurrence of water in the alluvium below the site may increase the opportunity for continued salt accumulation over time. The degree and propensity for this to occur can not be determined with the existing data. During moist climatic periods the mobile salts which may have accumulated through time could be leached downward.

The Permittee, provides the following measures during the reclamation period to minimize acid and toxic forming potential: 1) Diverting water around the slurry cells thus, minimizing water available for leaching and, 2) Leaving a roughened surface to maximize plant water uptake(this may however increase the salt movement to the surface and, 3) Evaporation rates are greater than precipitation rates.

Transfer of Wells

The Permittee has not applied for transfer of any wells to another party.

Discharges into an Underground Mine

No discharges into an underground mine are proposed. No underground mines exist in the preparation plant vicinity.

Gravity Discharges.

No gravity discharges are requested or approved. No underground mines exist in the preparation plant vicinity.

Water Quality Standards and Effluent Limitations.

Until the Permittee is able to describe the existing site characteristics for Boron, Selenium and leachable salts, the determination of completeness for R645-301-750, R645-301-751 and R645-301-730 cannot be met. Further discussion and review is necessary for this section.

Other Hydrologic Protection Measures

Map E9-3341 provides the facilities map showing an oil storage area, fuel storage building, and the non-coal waste storage area. The location of diesel and gasoline are shown on Map 712d. Text includes discussions of truck wash down areas and oil changing areas on

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page 14 and 16 in Section 7.28. Table 7.28.4 in the PAP, lists chemicals currently stored within the beltline and power building. The shop building is also used to house all other oil, grease, antifreeze etc. and is used as the site for all truck maintenance. Trucks too large to fit in the shop are cleaned and have their oil changed in back of the shop in the general shaded area as shown on Map 712d".

The gas and diesel storage tank enclosures have been sized as required in Section 7.28.3. " Tanks will be moved and any contaminated soil currently found beneath the tanks will be removed and properly disposed of, after which rectangular concrete bases will be constructed..." A discussion is included in Section 7.28.3 and attached design calculations are included in Appendix 7.28-1 for sizing of containment berms for storage tanks areas. The Permittee's proposal describes several scenarios. Following construction the as-built design should be included in the plan. The Permittee also presented designs for a 2 " steel pipe with valve and screw cap and 4" concrete filled pipes for drain protection.

A spill prevention and countermeasure plan certified and dated December 6, 1993, is contained in Appendix K. The main components identified by the plan are:

1. Any leaks, damage or unusual conditions will be reported immediately.
2. Diesel, gasoline and stoker oil tanks will be visually inspected regularly.
3. Transformers and components will be checked regularly for leaks or other damage.
4. Repairs will be completed as soon as possible.
5. Absorbent material such as oil-dry, straw, sawdust, rags or earth shall be used to soak up spilled fluids and will be maintained on site for emergency use.
6. Oil soaked materials will be collected and placed in barrels and disposed of as contaminated materials

Diversions

Information on diversions are presented in Sections 7.42 and in Hydrologic Appendices. The upgraded haul road diversions are found in the As-built Facilities amendment revised 2/23/90. Some of this information is now included as a part of the plan. The peak flow designs for DD-1 through DD-3 as shown in the "as built" facilities map were not located in the plan. The culvert designs for C2, C-4, C-6, C-7, C-10, C-11, C-12 could not be located in the plan.

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Table 1
Undisturbed Drainage Diversions

Diversion	Design Life	Design Event	Function
UD-1	Temporary Diversion	10 year-6 hour	Collects flow from Watershed #2 and #3 diverts water around preparation plant area.
UD-1A	Temporary Diversion	100 year-6 hour	Collects flow from Watershed #2 and #3 diverts water around preparation plant area. and diverts water around the Plant refuse pile.
Siaperas Ditch	Permanent Diversion	100 year-6 hour	Collects flow from Watershed #9 and diverts water around the Slurry Impoundments.
Pipeline Slurry South and North Ditches	Temporary	10 year-6 hour	Collects flow from disturbed areas in Watershed #8 and diverts them to the Pipeline Slurry Sediment Pond.
Permanent Diversion	Permanent	100 year-6 hour	Collects all undisturbed flow north of the Slurry Cells and diverts water into the Siaperas ditch.
UD-2	Haul Road Diversion		Collects drainage from south side of haulroad to CU-1 and crosses under the road.
UD-3	Haul Road Diversion		Collects drainage from south side of haulroad to CU-1 and crosses under the road.
UD-4	Haul Road Diversion		Collects drainage from south side of haul road and diverts water under the road through CU-2.
UD-5	Haul Road Diversion		Collects drainage from south side of haul road and diverts water under the road through CU-2.
CU-1	Haul Road Diversion		Passes drainage under road to SAE-1.
CU-2	Haul Road Diversion		Passes drainage under road to to SAE-7.

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Table 2
Disturbed Drainage Diversions

DD-3	Pad Drainage Area		Diverts Drainage from pad area to Plant Sedimentation Pond.
DD-4	Pad drainage and Pond Discharge Ditch	10 year-24 hour	Takes drainage from the Plant Sedimentation pond to the area between the Railroad and Plant Refuse Pile.
C-2, C-5 and C-8	Preparation Plant Railroad Spur	10 year-6 hour	Passes drainage from Watershed #1 under rail road spur. C-23.
C-3, C-9, and C-14	Preparation Plant Railroad Spur	10 year-6 hour	Passes drainage from the railroad spur to C-9 and C-14. The unnamed north-south culvert near C-9 should be plugged and a berm just south of C-8 must be built to a height to 2.6 feet higher than the top of the inlet to C-22.
C-21, and C-22	Preparation Plant Railroad Spur	10 year-6 hour	It is recommended that a berm be built south of the inlet C-22 to a height of the top of the 36 inch culvert so flow will pass through the culvert before overflowing to watershed #4.

A nick point has occurred in the Permanent Diversion due to the pond that is excavated in the ditch. The Permittee has committed to fill in the excavated area. Original designs included the pond on Exhibit E93427. This should be removed following repair.

It is proposed by the Permittee that sections of the south pipeline slurry ditch steeper than 4% be stabilized using an erosion control blanket such as North American Green C125 flexible channel liner. The Permittee has committed to use the erosion control blanket according to manufacturers recommendations in the text of the plan. The Permittee has provided the necessary information for implementation of this project. The Permittee uses Manning's "n" of 0.035, to provide the tractive force determination, however the manufactures co-efficient indicate Manning's "n" from 0.022 to 0.014 should be used for the proposed blanket at the potential depths of flow. The proposed use is for areas where the gradient is from 4 to 21%. Even though the design for a 0.21 ft/ft bed slope slightly exceeds the allowable tractive force, the design flow is moderately conservative based on the information presented by the Permittee. Assuming the values used in design computations are representative of the site, the use of the proposed blanket up to 0.21 ft/ft bed slope reaches the upper limit for applicable use of this product. Therefore, the potential for failure is greater at that gradient.

Stream Buffer Zones

Stream Buffer zones were established in the August 22, 1984 permit approval. Suspension bridges carrying slurry pipelines; a diversion dam and sluiceway to divert water to the pumphouse; and a bridge for an access road were constructed prior to enactment of the

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Surface Mining Control and Reclamation Act in the buffer zone. Buffer zones signs were placed within 100 feet from the Price River.

Sediment Control Measures

The Permittee has proposed ASCA#7 which utilizes the present practice of silt fences and straw bales as means for alternate sediment control. In the response memo (May 2, 1994) the Permittee, proposed to reclaim ASCA #7 through reseeding the disturbed area. The existing silt fence and straw bale system was to be maintained until revegetation was successful.

The Permittee has had problems with the existing silt fences at ASCA #7 such that piping regularly occurs through the fence. In field conditions it was recognized the fence is constantly maintained but does not function well (i.e. may not meet Best Technology Available) for this area. This area has a low potential impact with current operations relative to downstream conditions since the drainage passes through Mancos Shale. Performance standards and field inspections will determine the success of the design.

Additional changes to the ASCA's are presented by the Permittee to conform with Directive Number Tech-003 from the Division.

Proposed changes to the alternate sediment control measures include using a berm and silt fence at ASCA #3. The Permittee presented minimum berm dimensions which include a 1' freeboard for conveyance of water from a 10 year - 6 hour event to a silt fence, and a 10 year - 24 hour storm volume of 0.25 AF.

Proposed changes to ASCA #4 include a CN change and a 10 year -24 hour runoff volume of 0.04 AF. No control methods are identified in text, however the diagram shows a silt fence at the north east end.

ASCM #5 includes a minimum berm height of 1.15 feet. The Design berm for a 10 year - 6 hour event with a peak flow event of 0.69 cfs was 1 foot.. The berm however is located in a low point and is not used as a conveyance structure. Although the size should be adequate for a 10 year - 24 hour event the design should be for that event. A portion of the site also drains to a silt fence and/or straw bales at the north west end of the disturbance and would receive a runoff volume of 0.1 acre feet from the 10 year - 24 hour event.

Siltation Structures

The inspection description includes the weekly requirements for the Clearwater Pond and Lower and Upper Refuse impoundments and is presented in section 5.14 (5/2/94). Other sedimentation ponds will be inspected quarterly.

Sedimentation Ponds

References to cross-sections provided for the Road Pond and Auxiliary Pond emergency spillways are found on Drawing 712d. Sediment cleanout elevations and

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sediment storage volumes are on the stage capacity curves for the Auxiliary, Road and Dryer sediment ponds (see Sheets 2 through 4 of 4 in the Hydrologic Appendix Watershed #4).

Engineering practices generally require cross-sections for length and width and include critical sections such as minimum embankment height. This information was provided in earlier cross section diagrams and is a more easily inspectable plan. This information was also provided for the Dryer pond. The Permittee has provide sediment storage and decant elevation on the pond stage capacity curves for other ponds.

The Permittee currently has the Road, Auxiliary and Dryer sedimentation ponds in series. The current operations provides design for the Dryer pond to be used without the Road and Auxiliary ponds. **The Permittee has not made it clear whether those ponds are intended to be retained or removed at this point in time. The Division therefore assumes the ponds will remain until formal notification is presented to the Division.**

The design flow rates for the Road, Auxiliary, and Dryer Sediment pond spillways were derived based upon information supplied in the Hydrologic Appendix. Hydrologic calculations include: cover type (Sheet 2 of 7), Curve Numbers (Sheet 3 of 7), time of concentration (Sheets 6 & 7 of 7, 10-year 24-hour HEC-1 model printout with peak flows summarized on Sheet 13 of 13, and 25 year 6-hour HEC-1 model printout with peak flow summarized on Sheet 10 of 10.

The permittee has designed the Road Pond emergency spillway to spill out the south end of the Road Pond. The control point is set by the road elevation. The emergency spillway for the Auxiliary Pond occurs over the topographically low south portion of the pond. Although the Permittee's spillway design is not conventional, it indicates the velocity across the site in a flood event is not expected to be of a significant nature to cause damage. Because the ponds are incised and the surrounding area is flat, impacts due to failure of the pond would be negligible. Cross sections across the slurry pipeline sediment pond are found on Sheet 712c. Emergency spillway locations presented for the Auxiliary Pond and Road Pond are found on Sheet 712d.

The Dryer Sediment pond is shown to contain the 10-year 24-hour precipitation event from Watershed #4 and pass the Peak 25-year 6-hour storm event through a drop inlet spillway structure when the pond is full. The sediment storage (below the decant level) was estimated to be .036 AF per year. The clean out sediment level at 5330.31 estimated volume is 0.84 AF or approximately 23 times the computed 3 year sediment volume (not 50 times as stated in the text). Thus, sediment volume is adequate.

There remains some question as to whether the primary and emergency spillway and the 24 inch inlet are at adequate elevations so that the water will not back out of the inlet in a large event rather than exit through the designed spillways. Currently the principle spillway elevation for the Dryer pond is at 5336.91 according to Map 712D, while the emergency spillway is at 5337.91. The current principle spillway for the Auxiliary pond is at 5335.9 (with a riser) according to Map 712D, while the emergency spillway is at 5340.6 according to the spillway designs. The current principle and emergency spillway for the

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Road Pond is at 5336.5 and 5339.3 respectively as show on Map 712D. Because the dryer pond primary spillway is at 5336.91 feet water will back into both the Auxiliary and Road ponds prior to spilling through the Dryer Pond primary spillway.

Thus, the Permittee's proposal to remove both ponds becomes a problem during the operational phase. Relative elevations are included on Maps 712E and 712D and it is determined that the pond inlets and outlets do not properly drain and therefore do not meet the requirements of R645-301-742.300 and R645-301-742.200. If the Permittee removes the Auxiliary Pond the water will spill out of the inlet before spilling through the spillway at the current configuration. Therefore, the Permittee must provide complete site grading as presented in E9-3342 prior to removal of the Auxiliary Pond or provide site specific information including proposed elevations and cross sections for the inlet and surface elevations prior to Auxiliary Pond removal. This map revision of June 1995 was certified but did not include a signature. A signed certified copy is necessary.

The Dryer Pond decant is proposed to be a continuing discharge and was demonstrated to meet the effluent limits using the SEDCAD program. The Decant is located approximately 5.3 feet below the primary spillway at 5331.62 feet. The sediment clean out level is at 5330.31 feet or 1.31 feet below the decant. (It should be noted that with the decant level close to the sediment clean out any proposal to change that elevation would require an increase in the decant elevation). Normally a lab sheet is required to demonstrate the soils analysis to determine what soil sizes exist on site. In this case the Permittee has provided soil gradation without referencing where the values were obtained. Should a sample of the discharge from the decant indicate the operator is not meeting effluent limits the Permittee would be considered in violation of the permit. The UPDES permit should reflect the operators proposed decant operations.

The information presented is not clear as to the operational configuration, the Permittee would have to regrade the site and move the inlet to provide a prudent engineering design required by **R645-301-512.240** and meet **R645-301-742.221.35**.

The north west emergency exit functions as an inlet until the water reaches a 95.1 foot (map) elevation. At this point it becomes an outlet. The use of an inlet as an outlet is not considered a normal design and was not in the original approved design for construction. Since this pond is newly constructed the Permittee would better meet the objectives of the regulations with the intent of meeting the design requirements of **R645-301-745.225.2**, demonstrating a single discharging spillway is adequate by showing the pond can retain the larger of the 100 year - 6 hour and 10 year - 24 hour event. The applicant has not provided this but, is willing to provide certified designs for the pond. The lack of a more conventional design is not expected to result in significant environmental harm at this site with the current operations.

Other-Treatment Facilities

No other treatment facilities are used at the Wellington Preparation Plant.

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Impoundments

History

In 1978 the upper refuse pond was removed from service and all clarification processes were completed in the lower pond. In 1983 the height of the lower slurry pond embankments (Lower Refuse dike) was increased 11.1 feet, changing the initial configuration. Work was completed in the spring of 1984. The proposed change to extend the North Dike and Upper refuse dike was never completed, but was proposed to be completed in 1985. (Rollings Brown and Gunnell report Appendix E 1983).

The Permittee has provided calculations for the runoff from Watershed #7 (Refuse Basin) generated by the PMP-6 hour event estimated to be 439.1 acre feet. The capacity of the basin was calculated to be 763.6 acre feet. The calculated runoff from the PMP would occupy only 58% of the capacity of the basin.

Casing and Sealing of Wells

The Permittee commits in 7.38 and 7.48 that monitoring and water wells will be temporarily or permanently sealed in compliance with **R645-301-748**. In section **731.400** of the PAP it is stated that exploratory and monitoring wells will be sealed in accordance with requirements of the State Engineer and DOGM. In Section 7.28.3.1 the PAP it is stated that monitoring wells will be used to replace a "significant diminution" of surface or ground water caused by operation of the plant. In section 5.40 of the plan it is stated that the well casing will be removed at 2 feet below final grade and filled with soil from the pump house.

Water wells and ground water monitoring wells are permitted by the State Engineer through the Utah Division of Water Rights. Water and monitoring wells must be installed, operated, and closed in accordance with Utah Code Section 73-3-25 and Utah Rules for Water Well Drillers. The Permittee does not state whether or not the Division of Water Rights permitted the monitoring wells and if that Division's standards were followed.

If any future groundwater monitoring wells are anticipated then methods of installation, management, and closure should be approved and permitted by the Division of Water Rights and the information included in the MRP. If these wells do not come under the requirement of these regulations the wells should be closed in a manner that prevents degradation of water quality.

Findings:

The Permittee has not met all requirements of this section:

In order to be in compliance with this section the following must be done in accordance with the requirements of:

R645-301-732.225, appropriately cap well GW-2, or provide measures for proper abandonment.

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R645-301-722.300, Identify the location of all NPDES discharge points on the water monitoring maps.

R645-301-731 and **R645-301-728.335**. Monitoring of SW-4 should be moved near to GW-3 and be monitored at the same time to assist in determining effects of dilution or evaporation on water quality at GW-3. If flow is obtained at SW- 4 during an event, then data from SW-3 would be of importance to the operator and should be sampled. SW-3 should be moved and located just above the slurry cells in the Permanent Diversion Ditch. A commitment to submit all field data to the Division and a commitment to provide actual flow measurements must be clearly incorporated into the plan. Collection of "same day" surface and groundwater samples at stations SW-2 and GW-6, SW-4 and GW-2 and GW-3 should be committed to. GW2 and GW-5 should be removed and GW-6 should be retained.

R645-301-750, **R645-301-751**, **R645-301-730**, describe the existing site characteristics for Boron, Selenium, and leachable salts.

R645-301-740, designs and discussion of drainage ditches DD-1 through DD-3 as shown in the "as built" facilities map were not located in the plan and should be provided. The culvert designs for C2, C-4, C-6, C-7, C-10, C-11, C-12 could not be located in the plan and also need to be provided.

The Permittee must demonstrate the pond meets the requirements of the **R645-301-740** and **R645-301-760** by doing the following:

1. Providing complete site grading as presented in E9-3342 prior to removal of the Auxiliary Pond or provide site specific information including proposed elevations and cross sections for the inlet and surface elevations prior to Auxiliary Pond removal.
2. Providing a certified map for revisions of June 1995 A signed certified copy is necessary.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The permittee has provided the statements required by R 645-301-526.200 in Chapter 5.26 of the PAP.

Findings:

The PAP meets the requirements of this section.

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SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Signs and markers have been posted and are maintained at access areas from public roads; at topsoil stockpiles; and at the stream buffer zones along the Price River.

Findings:

The PAP meets the requirements of this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

The Permittee states that no blasting or explosives are used in the present operations plan. If blasting is required in the future, a plan will be submitted to the Division with standards that are in compliance with R645-301-524. The Permittee does not currently use or store explosives on site. If the need arises the Permittee must obtain Division approval prior to use.

Findings:

The PAP meets the requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

Affected area maps are provided as identified under the Environmental Resource Information section of this TA.

Mining Facilities Maps

Mining facilities maps are provided as identified under the Environmental Resource Information section of this TA.

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Mine Workings Maps

There are no mine workings in the permit area.

Monitoring and Sample Location Maps

Monitoring and sample location maps are provided as identified under the Environmental Resource Information section of this TA

Findings:

The PAP meets the requirements of this section.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

Discussions Related to Selenium and Boron Plant Uptake and Toxicity:

The Division Guidelines for the Management of Topsoil and Overburden, Table Two, classify material with extractable Selenium concentration greater than 0.1 mg/Kg and extractable Boron concentrations of greater than 5mg/Kg to be toxic forming. The Slurry Pond Basin Area data values shows; 62% were greater than 5 mg/Kg extractable Boron and 95% of the slurry were greater than 0.1 mg/Kg extractable Selenium. Based on the Coarse Refuse Pond Refuse Pile data values, none were greater than 5 mg/Kg extractable Boron while 75% of the coarse slurry sample data were greater than 0.1 mg/Kg extractable Selenium. For the Coarse Refuse Pond Refuse Pile data collected no values were greater than 5 mg/Kg extractable Boron while 44.4% had values greater than 0.1 mg/Kg extractable Selenium.

The Division is fully aware that the typical 5mg/Kg HWE-boron agricultural standard may not be suitable to the reclamation plant species proposed. Many of these species may or may not be well adapted to HWE-boron greater than 5 mg/Kg. Keren and Bingham (1985) and Maas (1986) have presented threshold concentration range of Boron (B) for sensitive (0.078 - 0.093 mol B/m³) { 0.57 - 0.68 mg/Kg}, semitolerant (0.093-0.37 mol B/m³) {0.68 - 2.72 mg/Kg}, and tolerant crops (0.37-1.39 mol B/m³) {2.72 mg/Kg - 10.21 mg/Kg}. Extensive descriptions of B toxicity symptoms are given in publications by Eaton (1944) and Gupta et al. (1985).

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Correspondingly soil/refuse/spoil AB-DTPA and HWE-selenium and plant tissue concentrations may or may not be correlatable. However one cannot ignore that plants tend to concentrate most elements relative to the soil concentration (Gough and Erdman, 1980). Soils developed under drier regimes often closely reflect the chemical and physical properties of the soil parent materials (i.e. coal mine waste). In the semi-arid west Se and B form soluble anions at higher pH (Boon et al. 1987). Plant samples containing greater than 5 ppm Se are considered toxic to livestock (National Research Council, 1976).

The slurry ponds represent the greatest single disturbance on site and may jeopardize the post mining land by creating forage that will induce either acute or chronic toxicity in herbivores. Several difficulties exist in making interpretations of Selenium analytical data. The problems are partially based on plant species that have differing capacities to extract and incorporate Selenium into their tissues. As an example the widespread use and successful establishment of Western Wheatgrass and Fourwing Saltbush in reclamation efforts are widely accepted. Both species are quite palatable to livestock and have been described as secondary accumulators (Rosenfeld and Beathe, 1964). Both species have demonstrated capacities to accumulate relatively high concentrations (over 100 ppm) of Selenium in their tissues (Munshower and Producers, 1990).

The slurry ponds represent the greatest potential for adverse impact on groundwater and surface water quality. The geomorphological position of the slurry ponds is within the one hundred year flood plain of the Price River and probably hydrologically linked to the Soldier Creek alluvium. Transport of soluble forms of Selenium, Boron and other trace elements with percolating waters will occur during precipitation events, snow melt, through alluvial deposits and vary seasonally. The total Selenium, Boron and other trace element concentrations and ion species are important in defining potential trace metal groundwater contamination problems. An understanding of the equilibrium developed between the mineral and solution phase, as well as the redox conditions in the backfill and alluvial environments, will be important in defining the potential for hydrologic transport and water quality degradation.

The Division does not consider the revegetation test plots representative of the growth conditions on the slurry ponds. As of the spring of 1989 slurry ponds were saturated (personnel observations base on four trench excavations). Based on the most recent sampling of the slurry ponds (Spring of 1994) the upper eight feet, at the time of the sampling were "dry". Evapotranspiration has diminished (on average) the moisture content of the upper eight feet of the slurry pond profile. Diffusion and capillary action has transported Boron, nitrate-nitrogen and other soluble salts to the slurry surface. Cessation of slurry delivery has resulted in a reversion of the slurry to more aerobic conditions. Potentially increasing the mobility of trace elements within the slurry ponds. In addition, slurry deposition during commercial operations have resulted in slurry many times the thickness of that found in the revegetation test plots and has potentially release greater quantities of trace elements and salts.

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The vegetation growing on the Coarse Slurry and the Fine Slurry revegetation test plots, the volunteer species currently growing on the slurry ponds, and a geobotanical vegetative survey should be conducted to determine the plant species tissue trace element concentrations, frequency and distribution to demonstrate that the site will meet postmining land uses. In addition to the above evaluation, the Permittee should include pot culture and greenhouse tests, artificial weathering, long-term column leach studies, Selenium, Boron and potentially other trace element partitioning studies.

Weathering test, column studies, greenhouse and field trials used to evaluate increased topsoil depths and thickness and type of capillary barriers (i.e. capillary barriers consisting of 20 cm of durable cobblestones and 10 cm of durable coarse gravel and/or combinations thereof). In general coal mine waste covered by the greatest topsoil depths have the least potential of salt and trace element movement in either direction in the profile. The deeper the coal mine waste is buried, the less it is affected by leaching and capillary effects. The closer the coal mine waste is to the surface, the greater the increase in deep percolation. The applicant has provided for four feet of cover which will aid in limiting movement. However, the movement of salt and trace elements under this site condition are unknown.

Over the reclamation period vegetation that may be utilized should be assessed to determine if the vegetation is bioaccumulating toxic elements and to assure the site meets the postmining land use and for the protection of wildlife (i.e. is not toxic to wildlife or range).

Findings:

The reclamation plan provides for 4 feet of cover over the slurry material which should reduce the potential for salt and trace element movements in the profile. Further demonstrations showing the vegetation is not toxic to wildlife may be necessary. The permittee has met the requirements of this section at this time.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275

Analysis:

The premining land use description approved in the 1984 technical analysis describes those areas occupied by the coal cleaning plant, the rail road system and the refuse disposal area as "undeveloped lands" while remaining areas were described as used for limited grazing. The postmining land use was approved to return all disturbed areas to "undeveloped lands".

Although areas proposed to be disturbed for the topsoil borrow areas "A" and "E" were historically used as cropland, cropland use was not illustrated on Map E9-3343, nor approved as a premining land use with the 1984 permit decision package. These areas were considered to be "lightly grazed and undeveloped lands" as defined for premining uses at the

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time of permit issuance. The Permittee should note that where cropland is proposed to be a postmining land use, the requirements for bond release for farmland productivity must be equal to a reference area or other success standard approved by the Division. A success standard would need to be approved.

The Permittee has proposed land use changes without completing the requirements of R645-301-414. The Permittee states that in the past post-mining land uses were grazing, cropland, and wildlife. However, the proposed changes in postmining land use were never processed through the regulatory requirements. The confusion may have come about from Map E9-3343(1) which shows the current land uses.

R645-301-414 requires the Permittee to demonstrate that the land will be returned to its premining land use capability as part of the original permit. The Permittee has attempted to do this in the current reclamation plan. The proposed postmining land use changes must first meet R645-301-414 and other applicable requirements to obtain approval and incorporation into the plan.

Land Owner Comments

Portions of the railroad are proposed to be retained for reclamation. The Permittee must clarify the portions for which the railroad will take responsibility for post-mining land use. The easement agreement with the Denver and Rio Grande Western Railroad attached to Appendix J was not located.

Reclamation activities will occur within 100 feet of the Ridge Road and the road between the slurry cells. Carbon County has provided a memo to NIECO to indicate the county has no objections to reclamation work that may occur in proximity of "a" county road. If there are adjacent land owners who may be affected by reclamation adjacent to a public road they should also have an opportunity to comment. A discussion of the area north of the main road, previously used as a haul road to the site, and its relationship to the post mining land use should be included in the MRP.

Prior to commencing reclamation phases the Permittee must obtain the following:

1. Provide a letter from the appropriate entity accepting responsibility for the Ridge Road and any other roads or utility to remain for post mining land use.
2. The relationship of the area north of the main road, previously used as the haul road to the site, and its relationship to the meeting reclamation and post mining land use requirements should be included in the MRP.

Findings:

The land use information was determined adequate in the 1984 State Permit Decision Package. The premining land use was determined to be undeveloped land and limited grazing and the postmining land use is approved as "undeveloped lands".

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Prior to reclamation and approval of the changes in postmining land use the Permittee must provide the following in accordance with the requirements of:

R645-301-414, provide an amendment for the proposed change in postmining land use or maintain the approved postmining land use.

RECLAMATION PLAN FOR FISH AND WILDLIFE

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-342, -301-358.

Analysis:

The only critical wildlife habitat in the permit area is the riparian area along the Price River. The permittee has submitted revegetation plans for this area including restoration of riparian plant species.

The plan says a specific wildlife plan to enhance wildlife habitat is not possible until the Permittee finalizes postmining land use plans. Native species have been included in the final reclamation seed mixture. Crop management practices following reclamation may include breaking up large areas of monocultural crops with trees, hedges, and varied crops and pastures to provide habitat and diversity for wildlife. If an industrial area is developed, the Permittee could intersperse reclaimed land with greenbelts or grass, shrubs and trees.

Included in Chapter 4 are conceptual plans that were discussed with the Division of Wildlife Resources in an April 1994 meeting. Six areas with different management techniques were outlined initially in the area. The Permittee proposes this conceptual plan be submitted to the Division if it is approved by the Operator and appropriate government agencies.

The Division can approve some conceptual plans. However, with the exception of the riparian area revegetation plan, there is inadequate detail of what enhancement measures would be used.

The land use regulations require a demonstration that an area can be returned to the premining land use. The permittee needs to finalize the reclamation plan without including conceptual plans for industrial areas or similar alternate postmining land uses. Once the reclamation plan is finalized, the permittee can concentrate on changing the land use as needed. The permittee should be able to incorporate enhancement measures for the premining land use in the plan.

One potential habitat enhancement measure is to remove tamarisk along the portion of the Price River in the permit area followed by revegetation with willows. Another might be to erect raptor perches or nesting structures. The permit area has numerous rodents and other small herbivores and might be a good place for one or more of these structures (although utility poles were not being used by raptors according to the 1992 letter from the Fish and Wildlife Service). If the Permittee tries to pursue this option, they should consult

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with Wildlife Resources about whether it is needed in the area and what designs should be used..

Findings:

The Permittee has not met the requirements of this section as there are no plans for specific wildlife enhancement measures required by **R645-301-342**.

The Permittee must provide the following, in accordance with the requirements of:

R645-301-342, commit to reclaim the area to the premining land use and include a plan for practical wildlife habitat enhancement measures using the best technology currently available (following approval, the permittee can consider alternative land uses and how habitat enhancement measures can be incorporated into these land uses).

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The reclamation grading on Drawing E9-3342, Sections 3.41 and Section 7.28 provides for drainage over the coal mine waste (slurry impoundments). The regrading plan and ditch locations attempt to blend into and complement the drainage pattern of the surrounding terrain as required by **R645-301-553.110**. The configuration does not blend into and complement the drainage pattern for the land prior to mining. An alluvial or deltaic formation would be found in the filled drainage and the slope at the base of the coal mining waste is greater than what was present prior to mining. The constraints limiting design are the retention of the upper and lower impoundment dikes. It appears the permittee is routing the drainage around the lower dike to prevent destabilization of the dike. It would be preferable to provide a more central drainage route without the one large meander at the east end of the dike although this would require additional grading and removal of the lower dike. The proposed configuration may not provide long term geomorphic stability and could erode through the dike and slurry over time. However, with the diversions the drainage area has been decreased and the drainage is ephemeral in nature. The applicant has met the minimum requirements for this site as it pertains to Approximate Original Contour.

Findings:

Prior to completing a finding on Approximate Original Contours the applicant must demonstrate the refuse site meets the requirements identified in the backfill and grading section below.

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BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

Reclamation backfill and grading information can be found in Section 5.40. No highwalls exist at the site. Stability analysis of the Refuse Dikes were conducted in 1985 and assumes a crest width of 15 feet. These analysis indicate the Upper Refuse Dike on the lower pond side with 3H:1V slopes had a static factor of safety of 1.5 and seismic factor of safety of 1.2 with 0.1 gram of horizontal force applied. The Upper Refuse Dike on the upper pond side with 2H:1V slopes had a static factor of safety of 2.2. and seismic factor of safety of 1.6 with 0.1 gram of horizontal force applied. The North Dike on the Siaperas ditch side with 2H:1V side slopes has a static factor of safety of 1.8 and a and a seismic factor of safety of 1.3. Although it is expected the factor of safety will increase by reclamation activities, the applicant should discuss how the factor of safety for this site may change as a result of the reclamation plan and show that the site meets requirements for a permanent coal mine waste disposal facility (slurry impoundment).

The Permittee has committed to protect necessary monitoring wells by flagging and extending the wells as necessary to maintain them during the reclamation process.

The permit has committed to grade the site to blend with the surroundings. Since this site is relatively flat it is difficult to show the proposed grading through contour information. The Permittee should provide grading to promote drainage to the railroad culverts and provide arrows to show overall drainage direction (Exhibit E-9-3342 1 of 2 November 6, 1995 submittal).

Findings:

Prior to completing grading and reclamation at the slurry cells the applicant must provide the following:

R645-301-542.400, a discussion on how the factor of safety for this site may change as a result of the reclamation plan and demonstrate that the site meets requirements for a permanent coal mine waste disposal facility (slurry impoundment) including MSHA requirements.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

No mine openings are associated with this operation.

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Findings:

This requirement does not apply to the operations at this site.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-232, -301-233, -301-234, -301-242, -301-243.

Analysis:

The specific pedon descriptions from the soil borrow material investigation 1995 for Borrow area "A" and "E" are summarized in the operations section

Reclamation concerns for soil salvage include the following in the Topsoil Borrow area "A"; Clay stratum exists below the 72 inch depth and the resulting change in depth of soil to 1.5 feet may change the reclamation feasibility of the borrow area to meet postmining land use and farming production criteria. Soils of high EC values and salt accumulations may influence reclamation of the site where used as topsoil application and where retained at the borrow area. Salt accumulations will move within the soil profile and may vary according to seasonal variability and moisture availability. Both the borrow area and reclamation site may need special mixing and handling requirements to assure adequate dilution of the soil EC and SAR.

Borrow area "E" is identified as Ravola Slickspots Complex. 70 % Ravola Loam (alkali), 20 % slickspots, and 10 % Billings. (Read previous description under "SOILS RESOURCE INFORMATION") SCS use rating for using this soil as a topsoil is rated fair: excess salt. The reclamation concerns for Borrow area "E" include identifying the extent of the slickspots and excluding their use as a substitute material. Handling practices for the substitute materials and soil cover for insitu slick spots occurrences may be necessary if they are extensive enough to affect revegetation success in the borrow area. Determining the alkalinity and salts present and the usable portions of the substitute materials for distribution is necessary.

The Permittee has provided identification of materials for proposed borrow site "A". In order to meet the requirements of R645-301.224, R645-301.233, and R645-301.233.100, the Permittee has committed to the following:

1. Provide a soils field investigation on Topsoil Borrow area "E" in April of 1996 to identify the extent of slick spots and soil phases that are high in clay and sodium, (as well as other problem areas).
2. Demonstrate suitability of Topsoil Borrow Area "E" for use as a topsoil substitute.
3. The includes timing and methods to provide adequate soil survey information for the proposed Borrow area "E."

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4. Committed to conduct a profile analysis immediately prior to salvage through monitoring E.C., pH, and SAR in topsoil borrow areas "A" and "E" which is adequate to determine the location and amplitude of salt accumulations and determine a handling plan which assures soils will meet the dilution necessary to meet acceptable standards.
5. Committed to provide an analysis by May 31, 1996 which demonstrates the remaining soils suitability for the postmining land use.

Findings:

With the submitted commitments the Permittee is determined to meet the intent of the regulatory requirements for this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

The applicants final grading plan Map E9-3342 shows the haul road a portion of the railroad spur and the county road adjacent to refuse pile to be retained. Retention of the haul road is not approved under the postmining land use but may be accepted when the applicant receives approval for a change in post mining land use. See the Discussion under "Post Mining Land Uses" in this Technical Analysis.

Findings:

The requirements for this section can be met when the deficiencies under "Post Mining Land Uses" are completed.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Water Monitoring

Some modifications to the surface water and ground water quality monitoring plan for reclamation were made to both Sections 7.31.21 and 7.31.22. These essentially confirm the maintenance of all groundwater stations, the elimination of two current stations, a slight change in the sampling location of another, and the addition of one new surface water monitoring station.

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Water quality stations SW-5 and SW-6 will be eliminated due to recontouring activities (SW-5 and SW-6 are at discharge outlets to the upper and lower refuse pond). Water quality samples from the Clear water Pond will be collected from the ponded water surface at the approximate location of SW-7 and not from the discharge structure itself (the existing SW-7 is the water discharge point from the clear water pond). Station SW-9 will be added (if practical and feasible) to obtain data from the reclaimed refuse pond surfaces (Section 7.31, page 6 (5/2/94)). No discussion of changes in monitoring is presented for the loadout area.

The proposed reclamation monitoring station at the clear water pond should assist in describing the waters coming off the surface of the slurry cells but does not address the sites at the loadout. Additional monitoring points at the preparation plant ponds and at the seep occurring at the base of the clear water pond provide information on the reclamation at the preparation plant and on water seeping through the pile.

The Permittee is proposing to provide irrigation to the slurry cells during reclamation. This increase in water application, beyond existing applications will leach salts through the profile. Often when changes in moisture occur a plume of water will develop with a high concentration of leached constituents. To determine impacts during this phase an increased water monitoring schedule will be necessary. It is suggested that during the application period the Permittee increase the number of samples obtained at well GW-6, GW-4, GW-1 and SW-1 and SW-2. A site downstream of the slurry cells and operations influence should be included.

Acid and Toxic Forming Materials

The applicant has proposed covering of acid and toxic forming materials with 4 feet on nontoxic materials and has minimized the potential for leaching and upward mobility of toxic materials to the root zone. See discussions in other sections of the plan.

Transfer of Wells

The applicant has not proposed transfer of wells to another entity and none is approved. The wells will be removed following a finding of no further potential for impacts to the ground and surface waters. Removal will be conducted following division approval according to the requirements for bond release.

Discharges into an Underground Mine

No discharges into an underground mine will occur at this site.

Gravity Discharges

No gravity discharges from portals will occur at this site.

Water Quality Standards and Effluent Limitations.

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It should be noted that the Permittee is expected to provide water monitoring for pond discharge according to the UPDES permit. And must meet requirements of other applicable state and water quality standards.

Diversions

Reclamation Drainage Diversions

Diversion	Design feature	Design Event	Function
Reach -1	Permanent	100 year - 6 hour	Collects flow from area north of the Plant refuse pile and diverts water around the pile.
UD-1A	Permanent	100 year- 6 hour	Collects flow from Watershed #2 and #3 diverts water around preparation plant area. and diverts water around the Plant refuse pile.
Siaperas Ditch	Permanent Diversion	100 year- 6 hour	Collects flow from Watershed #9 and diverts water around the Slurry Impoundments.
Permanent Diversion	Permanent	100 year- 6 hour	Collects all undisturbed flow north of the Slurry Cells and diverts water into the Siaperas ditch.
D1, D2, D3,	Permanent	100 year- 6 hour	Collects flow from reclaimed slurry basins and diverts them to the Clear water Pond.
D-3, D-4, D-5, D-6	Permanent	100 year - 6 hour	Collects drainage from south side of haulroad to CU-1 and crosses under the road.
County road culvert.	Permanent	100 year - 6 hour	Collects drainage from reclaimed slurry impoundments beneath road to the Price River.
Lower Slurry Diversion		100 year - 6 hour	Collects drainage from south east side of slurry impoundment diverts around the lower refuse basin.
Road side ditch and 2 culverts	County road	100 year 6 hour	Passes drainage along road away from coal mine waste under road to east side of drainage.

The drainage previously called Reach-1 is now proposed for grading to blend with the surroundings. The drainage from this area must be graded such that water is not ponding at the toe of the slope and so that water drains to the culverts retained as part of the railroad utility. The applicant should provide a discussion, drainage direction (using arrows to indicate flow) and demonstration showing the 100 year - 6 hour event will drain from the regraded area and will not pond at the toe of the refuse pile.

The Proposed "Diversion Ditch" is indicated to be discharged to the clear water pond prior to grading the clear water pond embankment. Following completion of the upper, sections D-1, D-2, and D-3, and after approval for pond removal the ditch will be completed to the Price River.

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Sedimentation Ponds

The Permittee included a schedule for removal of sedimentation ponds and sealing monitoring wells in Section 5.40.

Findings:

The Permittee must provide the following, in accordance with the requirements of:

R645-301-762.200, The drainage area previously called Reach-1 is now proposed for grading to blend with the surroundings. The drainage from this area must be graded such that water is not ponding at the toe of the refuse pile and so that water drains to the culverts retained as part of the railroad utility. The applicant should provide a discussion, drainage direction (using arrows to indicate flow) and demonstration showing the 100 year - 6 hour event will drain from the regraded area and will not pond at the toe of the refuse pile.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

The coarse refuse pile has been mostly inactive for several years. A stipulation to the permit requires Nevada Electric Investment Company to evaluate the Wellington Preparation Plant facilities and submit a reclamation schedule for those areas that will no longer be used. The Permittee indicates the coarse refuse pile will continue to be used for disposal of sediment pond waste from the Genwal mine. The Permittee could regrade this site to final contour and reclaim portions that will not be used further as a test plot. Problems in establishing vegetation on this pile could be corrected while the loadout/preparation plant is still operational.

Other areas of the site such as the slurry pipeline and slurry pond area have not been used since the slurry operations have ceased. The Permittee needs to evaluate the status of the disturbed areas. If the areas will not be used in the future, they should be reclaimed. If parts of it will be used, the Permittee should reclaim those portions that will not be used and use data from this reclamation to revise future revegetation plans.

Findings:

The Permittee has not demonstrated the reclamation plan complies with R645-301-352. All land disturbed by coal mining and reclamation operations must be reclaimed as contemporaneously as practicable.

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Requirement:

R645-301-352

1. In accordance with **R645-301-352** NEICO must provide plans and time schedules for contemporaneously reclaiming those areas of the site that are no longer being used to support the operation.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116;
R645-301-341

Analysis:

Revegetation Methods

According to the revegetation timetable in Section 3.41, six weeks of topsoiling, fertilization, and applying additional amendments would be followed by seeding in the fall. Fall is the normal time to seed in this area. Late fall is normally recommended, but some operators have had success with earlier seedings where some species can establish before snow falls.

There are six general areas at the Wellington Preparation Plant, and different methods will be used in these areas. The areas are the pump house along the Price River to the base of the clear water pond, the surface facilities, the coarse slurry, the coal storage and processing area, the coarse refuse pile, and the slurry ponds. As outlined below, different methods will be used for these areas.

Chemical and organic matter soil treatments, fertilizer, topsoiling, and requirements to cover potential acid- and toxic-forming materials are not discussed in this section of the technical analysis. Surface preparation methods are discussed; those that may be used are ripping, gouging, and trenching.

The Permittee commits to rip soils in the surface facilities area to a depth of one foot. Other areas will be ripped where needed.

Gouging has been the most effective treatment in the slurry pond/coarse slurry test plots. The slurry pond/coarse slurry test plot monitoring data cited in the plan, indicate perennial vegetation cover in gouges to be 18.38%, while perennial vegetative cover was 5.54% in non-gouged areas. Considering this and the difficulty the permittee has had establishing vegetation in any of the test plots, gouging is considered necessary to revegetate the area.

The plan contains commitments to gouge every area except the coarse refuse pile. It says gouging may be implemented on the more level areas of the coarse refuse site and

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contour trenching may be practical to provide better results in plant cover on the slopes of the pile. The Permittee needs to commit to some kind of water harvesting technique for the coarse refuse pile. The Division's experience is that gouging is more effective than contour furrows. Contour furrows, unless highly irregular, tend to promote concentration of flow and surface erosion if conducted on a sloping surface. Contour furrows may have greater success in low slope areas and may be more practicable for large area treatment where topography is fairly flat. There appears to be no practical reason why the area cannot be gouged and furrowed.

Three seed mixes are presented in the plan. Mixture A is intended for areas believed to have had a shadscale/galleta community. It contains 16 species all but one of which are native to the general area. Mixture B includes 15 species, and these are all native to the area. Mixture B is intended for planting in areas believed to have supported a greasewood/seepweed community. Mixture C is for revegetation of the riparian community and includes a plan to establish willows from seed. The places where the seed mixes will be used are shown on Map F9-178, 179.

Establishment of willows from seed is not a common practice, and the Division is not aware of exactly what techniques would be needed to accomplish this. Based on information from limited literature sources, it appears to be possible. Willow seeds apparently have a very limited viability period, so seeding would probably need to take place shortly after seed collection in the spring. It is not known how fluctuating water levels in the Price River would influence germination and establishment.

Although willows are not available in the immediate area, seedlings could be purchased from a commercial nursery or from the Lone Peak State Nursery. This may be a better option than trying a relatively unknown technology. However, since there have been a few successful experiments with establishing willows from seed, revegetation is considered feasible using this technique.

Seed will be applied by drill seeding in most areas except broadcast seed will be used in some inaccessible or steeper areas. In addition, the lighter, fluffy seeds that need to be on the surface or that cannot be drill seeded will be broadcast. Drill seeding sometimes decreases surface roughness, but surface roughness was successfully maintained in the test plots although they were drill seeded.

The Permittee plans to mulch with two tons per acre of certified noxious weed free straw or alfalfa hay. Mulch will be crimped or otherwise tacked to the ground. Straw and hay have been shown to provide better erosion control and surface protection for seedling establishment than many other mulches. The rate specified in the plan has been shown in different studies to be optimal in several situations.

Irrigation was used in the slurry pond/coarse refuse test plots and was one of the successful treatments. The plan says there is some doubt as to when and how often the plots were irrigated, but there was a significant positive correlation for irrigated compared to non-irrigated slurry pond test plots. All commitments to irrigate have been removed from the

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plan. Irrigation may be needed to establish vegetation on this site, but it should be possible to revegetate it with just the water harvesting techniques.

Half of the coarse refuse pile plots were irrigated, but irrigation does not appear to have benefitted vegetation establishment in these plots. Very few perennial plants have established on the coarse refuse test plots.

The original surface facilities test plots were removed in 1990. Half of these plots were irrigated. The plots were sampled in 1990 before they were removed, but the data cannot be found. Lynn Kunzler, Division biologist, recalls that the irrigated surface facilities plots had much more perennial vegetation than the unirrigated plots. He believes the amount of perennial vegetation was as great as in the reference area. The new surface facility test plots, discussed below, have had limited success with no irrigation.

Judging from available information on effects of irrigation, it may be needed for establishing vegetation on the entire site. Precipitation is variable and undependable, and irrigation appeared to have positive effects on most test plots. The Division can approve the plan to not irrigate most of the site, but the permittee may be required to add this commitment later.

Success Standards

Revegetation reference areas are shown on Map F9-178, 179. The plan contains a commitment to establish vegetation in accordance with the performance standards in R645-301-356.

Section 3.41 contains a final revegetation sampling schedule that will provide the data needed for determining whether the site meets revegetation requirements.

In 1984, the greasewood/seepweed community was in poor range condition according to the Soil Conservation Service evaluation. Earlier versions of the plan committed to have a range specialist for the SCS estimate the condition of each reference area in the summer of 1994. The permit now says the Permittee is attempting to have the Natural Resources Conservation Service (NRCS) estimate the condition of each reference area. If either of them is in poor condition, alternatives for improving the condition or changing the reference area will be considered. Information from the SCS (now NRCS) evaluation needs to be included in the plan.

Section 3.41 contains a final revegetation sampling schedule that will provide the data needed for determining whether the site meets revegetation requirements. However, the plan does not contain erosion control success standards. This is discussed under the section "STABILIZATION OF SURFACE AREAS."

Primary crops that have been grown in the topsoil borrow area are alfalfa and corn. Past production is estimated at 6500 pounds per acre for alfalfa and 5500 pounds per acre for corn. Production on the reclaimed area will be considered equal to this baseline information

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success standard when it is not less than 90 percent of the success standard with 90% statistical confidence.

It appears that less than one acre of riparian habitat was disturbed; therefore, there is no requirement to have a separate reference area. The permittee proposes revegetation success standards for this area in Section 3.41. These are 30% total living cover, woody plant density of 2000 per acre, and production of 250 pounds per acre.

The Vegetation Information Guidelines are referenced in the regulations for methods for determining revegetation success. The only methods approved for vegetation cover and production comparisons are to use reference areas, baseline data, and the range site method. For areas with a wildlife habitat postmining land use, the woody plant density standard is set by the Division after consultation with the Division of Wildlife Resources. Technical standards, similar to what the permittee proposes, are not allowed. Revegetation success standards for the riparian area need to be based on approved methods. If the permittee decides to use a reference area, the greasewood reference area is probably most similar to what existed prior to mining. The riparian area could also be compared to an appropriate NRCS range site.

Since the approved postmining land use is grazing, the regulations do not require a woody plant density success standard. However, the permittee must use the best technology currently available to enhance wildlife habitat, particularly in the riparian area since it is critical habitat. This necessitates establishment of some tall, desirable vegetation next to the river. Since tamarisk dominates the riparian areas outside the disturbed area, it is difficult to say exactly how the reestablished riparian habitat should appear. If tamarisk was not present, dominant species would probably be willows and/or tall grasses, such as common reedgrass or reed canarygrass. Farther from the river but still in the riparian area, it is expected greasewood and saltgrass will predominate.

The plan needs to specify diversity and seasonality revegetation success standards. It contains commitments to establish vegetation in compliance with the performance standards, but it needs to show exactly how this will be measured. The permittee needs to make some scientifically acceptable comparison between vegetation in the reclaimed areas and success standards, possibly the reference areas. Suggested methods include use of a diversity index to compare reclaimed and reference areas, and using NRCS range sites to establish minimum and maximum relative cover or production values for different life forms.

Without established standards for these (and other) parameters, it becomes difficult and sometimes arbitrary to determine if a permittee has met bond release standards. The "Vegetation Information Guidelines" contain ways of measuring some standards, but diversity, seasonality, and erosion control are not specified. Therefore, it is the responsibility of the permittee to propose these standards based on sound principles. It is then the Division's responsibility to approve or reject the proposed standards. Changes can be made through the amendment and Division Order processes.

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Numerous problems associated with soil and refuse will be encountered when reclaiming this site. Much of the refuse and some of the native soils have high salt and Boron levels which may inhibit water uptake or be toxic to plants. One of the success standards is that vegetation must be effective for the postmining land use. Selenium levels in some coal waste materials are higher than in Division guidelines. The Permittee now plans to cover the waste materials with 4 feet of non toxic materials which should aid in reducing availability of Selenium to plant growth. If plant Selenium levels are toxic to livestock, the vegetation would not be considered effective for the postmining land use. These issues are discussed in the review of the soils and coal waste.

Field Trials

The Permittee had planned to use results from other test plots to develop a plan to rework the coarse refuse pile test plots in 1994. Instead, the plan now contains a commitment to cover the coarse refuse pile with four feet of soil from the borrow area. It says additional test plots on the coarse refuse pile are not necessary because of this commitment.

The coarse refuse pile has been nearly inactive since 1985. A stipulation on the permit required the permittee to evaluate the Wellington Preparation Plant facilities and submit a reclamation schedule for those that will no longer be used. It was expected that field trials could be conducted on portions of the refuse pile that were permanently reclaimed. The permittee responded that negotiations to sell the property are ongoing and that it would not be prudent for the current permittee to commit to a timetable when the anticipated new owners' plans are not known.

The coarse refuse pile is now the subject of two notices of violation requiring designs and reconfiguration. Field trials for the areas to be contemporaneously reclaimed will be coordinated with violation abatement requirements or, may be implemented following abatement. Regulation R645-301-352 requires areas to be reclaimed as contemporaneously as practicable. The Division may develop a schedule for contemporaneous reclamation.

The surface facility plots were measured quantitatively in 1992 and were measured again in 1994. The 1994 data consists of plant density in each treatment plot (number of plants per acre). The data does not distinguish between desirable and undesirable species or give cover values. In 1992, these plots had about 2% cover from desirable species.

Although the most recent surface facilities plots have had limited success, this is probably due to climatic conditions rather than problems with the plan or its implementation. The previous plots apparently had better success, even in non-irrigated plots. Because favorable precipitation seasons are unpredictable and based on past successes and failures, it may be necessary for the permittee to seed more than once in order to establish vegetation on this site. However, it should be possible to establish vegetation meeting the requirements of R645-301-356 using the methods proposed in the plan.

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The slurry pond/coarse slurry test plots have had some success and have provided useful information about certain reclamation practices. These are discussed under "Revegetation Methods."

The November 10, 1994, submittal compares data from the slurry pond/coarse slurry test plots to new data from the shadscale/galleta reference area. However, only grasses and shrubs were used in most of the comparisons. The reasoning is that most of the broadleaf forbs in the test plots were annual weeds. They would probably not have utility for the postmining land use. However, about 17% of the total vegetative cover in the reference area is from native broadleaf forbs not considered weeds.

In these comparisons, one slurry pond treatment combination ("N") had more cover than the reference area, and three others were within about five percentage points. A statistical comparison is not possible since the raw data was not submitted, but all four of these plots would probably be within 90% of the reference area standard (excluding broadleaf forbs) with 90% statistical confidence. The "N" treatment combination plots were not significantly different from the reference area standard even when broadleaf forbs were included in the reference area cover data (level of confidence not given).

To test whether the results from the "N" plots are anomalous, comparisons were made using all plots with the individual treatments in "N" to other plots. "N" plots were irrigated, had no coarse slurry over the fine slurry, had six inches of topsoil, and had no organic amendment. The organic amendment had no effect, but all other treatments used in "N" plots positively affected other plots. Therefore, it appears the results from the "N" plots are not anomalous.

Data from the slurry pond test plots and personal observations of the old surface facilities plots by a Division biologist suggest irrigation is a beneficial treatment for vegetation success. Therefore, it could be necessary to irrigate the area to meet revegetation standards.

A permit transfer has been proposed for the Wellington Preparation Plant. The Permittee indicates the coarse refuse pile could be used by the new owners and, for this reason, they do not feel it is prudent to submit a reclamation schedule. However, the status of this pile and other facilities needs to be evaluated. If they will not be used in the future, they should be reclaimed. The Division may need to develop a schedule for contemporaneous reclamation.

Findings:

The Permittee must provide the following, in accordance with the requirements of:

R645-301-341:

- a) a commitment to a water harvesting, irrigation, or other method for the coarse refuse pile.

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- b) information from the NRCS evaluations for the reference areas in the plan.
- c) specific diversity and seasonality revegetation success standards.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Revegetation success is discussed in Section 3.41. The Permittee has not provided a measure to determine successful reclamation per **R645-301-353.140**. In order to measure the success of reclamation efforts, a standard should be supplied which will enable someone to determine whether or not the soil surface has been stabilized.

Findings:

The Permittee must provide the following in accordance with;

R645-301-356.100, a standard by which to measure the success of reclamation efforts in order to determine how the requirements of R645-301.353.140 will be met to control or prevent erosion.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

A description of procedures for temporary cessation of operations is not located in the plan. This must be provided.

Findings:

The Permittee must provide the following, in accordance with the requirements of:

R645-301-515.300, a description of procedures for temporary cessation of operations.

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MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

The disturbed area presented on the revised reclamation Map E9-3342 shows the potentially disturbed topsoil borrow area.

Bonded Area Maps

The disturbed area presented on the revised reclamation Map E9-3342 shows the potentially disturbed topsoil borrow area.

Reclamation Backfilling and Grading Maps

Map E9-3342 shows the extent of the graded areas.

Final Surface Configuration Map

It is assumed the final surface configuration Map E9-3342 is the proposed final configuration. However, this map still retains the new haul road, the culvert from the old haul road, and the slurry pipeline. All of these were to be removed, and are assumed to be removed, in accordance with the reclamation plan.

Reclamation Monitoring and Sampling Locations

See monitoring and sampling under the operations section of this T.A.

Reclamation Surface and Subsurface Manmade Features Map

No buildings as manmade features are proposed for retention. The Rail road right of way is shown on E9-3342. The county road is shown on E9-3342 but, so is the haul road which is not to be retained as a postmining land use.

Reclamation Treatment Map

The applicant has presented revegetation mix to be used for disturbed area reclamation on Map F9-178,179. No other reclamation treatment maps are known to exist.

Findings:

The PAP meets the minimum requirements for this section.

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BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800, R645-301-800, et seq.

The permittee has submitted an amendment to adjust the bond calculations in Appendix J on August 18, 1995 (revised August 17, 1985). On August 21, 1995 the Division determined that the bond amount, for the Wellington Preparation Plan, should be \$6,036,000. The bond amount is escalated through December 1999 and rounded to the nearest \$1,000.

The bond was based on the Operator's reclamation plan and cost estimate. It was assumed that reclamation would occur, under the worst case scenario, as defined by the OSM reclamation handbook.

Site conditions that were taken into consideration when determining the difficulty of reclaiming the area include:

- toxic soils that must be covered with a minimum of four feet of material;
- establishing vegetation under arid conditions;
- haul distance to disposal facilities.

Based on the information provided, the Division has determined that the site can be reclaimed at the end of the current permit for \$6,036,000, however it has recently been discovered that there is an undisclosed amount of asbestos found at the site. This may alter the cost of reclamation and therefore it is not possible for the Division to determine if the posted bond is adequate to accomplish reclamation.

On January 29, 1996, a Cessation Order was issued to NEICO which required them to "obtain appropriate approvals for and properly store or dispose the asbestos material by no later than April 1, 1996." If NEICO does not contemporaneously dispose of the asbestos, costs for disposal will need to be provided in the reclamation cost estimate so that the Division can determine the adequacy of the posted bond. If the bond is determined to be inadequate, additional bond may be required.

Findings:

A finding cannot be made regarding the adequacy of the bond until additional information is provided with regard to the disposal of asbestos. The permittee must either dispose of the asbestos or provide the following in accordance with R645-301-830.140:

A detailed cost estimate with supporting calculations which will allow the Division to determine the adequacy of the bond with regard to the disposal of asbestos.

TECHNICAL ANALYSIS

U. S. Steel Corporation
Wellington Coal Cleaning Plant
ACT/007/012, Carbon County, Utah

August 22, 1984

Introduction

The United States Steel Corporation's Wellington Coal Cleaning Plant is located on Corporation owned land near Wellington, Utah. The coal cleaning plant receives raw coal from the Somerset Mine in Colorado by rail, processing the raw coal to a reject product and a clean coal product. The clean coal product is shipped by rail to the Corporation's Geneva Steel Works in Orem, Utah. The reject product is placed in designated disposal areas in the vicinity of the plant.

The Wellington Coal Cleaning Plant was completed in 1958 and has been in continuous operation since that date. The cleaning plant is located west of the Price River adjacent to the Denver and Rio Grande Western Railroad. The primary reject disposal area is located east of the Price River and is connected to the cleaning plant by a refuse pipeline and a clear water pipeline. The refuse material is pumped from the cleaning plant to the refuse disposal area. The coarse refuse is placed in the refuse waste pile and the fine, high ash coal flows with the carrying water to the upper refuse pond. The fine material begins to drop out in the upper refuse pond. The partially clarified water passes to the lower refuse pond where the balance of the fine coal drops and clear water passes to the clear water holding pond for return to the coal cleaning plant on the west side of the Price River. The make-up water is pumped from a well. The source of the well water is the Price River. The well water passes from the river through the alluvials to the well which serves as a collection point. The water is pumped from the well to the clear water pond. The coal processing water system is a closed system to conserve and maximize use of the water. Water escapes from the system as water vapor from the heat dryer and through evaporation from the upper refuse, lower refuse and clear water ponds.

The plant receives from 1.5 to 1.8 million tons of raw coal annually and ships 1.2 to 1.5 million tons of clean coal. Some 300,000 tons of refuse is pumped or trucked to the refuse disposal areas.

The projected life of the coal cleaning operation exceeds 30 years.

An Operation and Reclamation Plan (ORP) for the Wellington Coal Cleaning Plant was received by the Division of Oil, Gas and Mining (DOGM) on March 19, 1981. DOGM did an Administrative Completeness Review on December 6, 1982 and an Apparent Completeness Review (ACR) on April 8, 1983. U. S. Steel responded with Technical Revision No. 1 submitted June 13, 1983 and Response to the Apparent Completeness Review (ACR) on July 11, 1983. A Determination of Completeness (DOC) review was sent to the applicant December 2, 1983. The DOC Response was received January 3, 1984. The permit application was declared complete on January 17, 1984. Newspaper advertisement of the application was published in the Price Sun Advocate beginning January 27, 1984.

Existing Environment

The Wellington Coal Cleaning Plant is sited on the Price River floodplain which has been deposited on the Blue Gate Shale member of the Mancos Shale. The major rock units which outcrop in and adjacent to the preparation plant are members of the Mancos Shale formation which is Upper Cretaceous in age--from oldest to youngest, they are as follows: (1) Tununk Shale; (2) Ferron Sandstone; and, (3) the Blue Gate Shale. These rock units strike N15°E and dip 40°W.

The permit area is in the drainage basin of the Price River which is a tributary to the Green River and ultimately the Colorado River. The drainage area for the Price River upstream from the plant is approximately 950 square miles. The plant is situated upon the alluvium deposits of the Price River floodplain. There are no springs or seeps and no perennial streams with the exception of the Price River within the permit area. Ground water resources in the permit area are limited to the water in the flood plain alluvials which range in depth from a few feet to 42 feet. The Blue Gate Shale member of the Mancos Shale formation underlies the alluvials. This low permeability member serves as a confining layer for the alluvial ground water. No water is discharged to the Price River or off-site as the plant operates on a closed water system where water is recycled through a system of ponds for clarification before subsequent reuse by the cleaning plant.

There are three major plant communities affected by the activities of the coal cleaning plant. Plant communities on the rolling hills are predominately Atriplex-Hilaria (Shaldscale-Galleta), and to a much lesser extent, Artemisia-Hilaria (Black Sagebrush-Galleta). Finally, the major drainage and valley disturbances were once inhabited by Sarcobatus-Suaeda (Greasewood-Alkali Seepwood) communities. Moreover, isolated patches of nearly pure stands of Indian ricegrass (Oryzopsis hymenoides) and mat saltbrush (Atriplex corrugata) can be found throughout the property.

The soils of the Wellington Preparation Plant were derived from colluvial processes related to indigenous soft shale and sandstone combined with alluvial deposition. Alluvial processes are currently significant as evidenced by deposition along oxbow bends of the Price River. A mesic temperature regime in association with an aridic and torric moisture regime when combined with aforementioned alluvial and colluvial processes have overshadowed the biotic factor in yielding aridisols and entisols. Soils are generally fine textured with low permeability and are often highly susceptible to erosion. Low nutrient supplying power and organic matter are significant considerations in reclamation. Failure to stockpile topsoil in predominantly pre-Law disturbances have necessitated the use of topsoil "borrow" areas. Such materials have been shown by chemical analysis to be suitable for reclamation and will be utilized in revegetation test plots to affirm their viability. Revegetation and mulching will mitigate potential erosion losses. Soil amendments will remedy any nutrient deficiencies.

UMC 817.11 Signs and Markers

Existing Environment and Applicant's Proposal

The applicant states that appropriate signs and markers have been placed in the Wellington Coal Cleaning Plant area, as follows (ACR Response, page 8).

Permit identification signs are placed at points of access to the permit area.

Permit area perimeter markers are in place and are maintained to be in good condition.

Buffer zone signs are emplaced 100 feet out from the Price River within the permit area.

Topsoil piles are appropriately identified.

Compliance

Applicant complies with this section.

Stipulations

None.

UMC 817.13-.15 Casing and Sealing of Exposed Underground Openings
Existing Environment and Applicant's Proposal

U. S. Steel's Wellington Coal Plant is a surface coal preparation plant with no underground mining. There are no underground openings to seal.

There are no boreholes within the permit area and the operator does not have future plans to install any.

There is only one water well in use within the permit boundary; it will be sealed in accordance with the regulatory authority guidelines at the time of reclamation (page 20, UMC 817.53, second paragraph).

Compliance

The well seal will be placed in accordance with State guidelines at the time of reclamation and is in compliance.

Stipulations

None.

UMC 817.22-.25 Topsoil

Existing Environment and Applicant's Proposal

The soil resources are discussed in the Operation and Reclamation Plan (page numbers 783-19 to 783-25), mapped on E9-3339, while data are presented in Appendix I of the DOC Response. The order 3 soil survey performed by the Soil Conservation Service (SCS) has been upgraded via intensive soil sampling.

The soils of the Wellington Preparation Plant were derived from alluvial deposition of sandstone and shale materials, colluvial process, with some alluvial deposition still in occurrence in oxbow bends associated with the Price River. These soils occur at an elevation of between 5,300 and 5,500 feet generally increasing in elevation from broad alluvial flats to colluvial slopes associated with mesas and benches.

Soils of the disturbed area associated with the plant site are the Billings-Bunderson Complex. These soils were formed from alluvial fans and flood plains. Such soils are fine textured and alkaline; salinity concerns and high erosion hazards are associated with these soils. Such soils are nearly impervious to drainage.

The Ravola soils (which occur near the refuse ponds) are derived from alluvium and from shale and sandstone. These soils are considered well drained. Such soils are moderately alkaline and moderately to strongly susceptible to erosion.

Shaley colluvial soils which are found at the base of mesas and benches abut the disturbed area in an incidental manner.

Mixed alluvial soils of moderate salinity occur in the areas where plant drainage accumulates and in the proposed substitute materials location.

UMC 817.22 Topsoil: Removal

Little future removal of topsoil is proposed. What will occur will be attendant to coarse refuse pile and slurry pond expansion (see Map E9-3339). When topsoil and topsoil substitute materials removal is necessary, it will be accomplished by utilizing data provided to the regulatory authority (see Table IIA) to evaluate soils with respect to suitability criteria (Appendix II, DOC Response).

A representative soil removal plan is provided in Appendix II (DOC Response) and will be supplemented by more detailed plans based on series specific information.

Substitute Soils: Identification and Removal

An area has been designated (see Map E9-3339) for the acquisition of substitute materials to remedy the deficit topsoil balance. This area has been sampled and data have been presented (Tables IIC-F, DOC Response) and have been compared to soil suitability criteria (Table IIA, DOC Response). This area is adequate to provide the required volume and soil materials are qualitatively acceptable (and will be improved upon by techniques such as adjusting the boundary of the substitute topsoil area to take advantage of material with lesser clay content and by the addition of organic amendments as described in the January 1984 "Revegetation Test Plot" submission [page 15]).

The operator will remove substitute topsoil from the topsoil borrow area to a depth of 1.5 feet (Page II-5; Rev. 6-26-84). The removal depth has been decreased and aerial extent increased compared to the plans presented in the TA response).

Results from test plots will be further utilized to affirm the viability of substitute materials.

Substitute materials will be removed from borrow areas by piling with dozers and loading with wheel-loaders for transport. Bulldozers and motor graders will then be employed to provide approved soil depths.

Compliance

Data from Table IID (DOC Response) indicate that clay contents are relatively high. The operator's suitability Table IIA rates these soils as poor while DOGM guidelines rate them as unsuitable. The operator proposes mixing soils of high clay content in future disturbances attendant to coarse refuse expansion to reduce clay content to 36 percent (see pages II-4, 5, DOC Response). The operator has discussed means to improve the texture of these materials proposed for borrow in the MX series such as providing mixing to reduce the impact of high clay contents (see page 1-4, DOC Response). The boundaries of the borrow area in the MX Series have been moved to the east to take advantage of soils which have lower clay content. In addition, organic amendments will be incorporated by use of disk harrows into lower redistributed soils derived from the MX Series (Response to Draft TA, Stipulation 817.22-(2)-TLP, and Memo to Coal File dated May 4, 1984). The precise type of organic matter and its rate will be ascertained through test plots.

The data presented to characterize the proposed substitute soil material shows the material to be suitable as substitute soil material. However, the data also appears unrealistically high for soil organic matter and conversely low for soil EC. The operator should adhere to the following stipulation for the purpose of validating the original data set.

The volume of topsoil substitute materials is currently inaccurate. Adherence to stipulation UMC 817.22(2) - TLP will bring this into compliance.

Stipulation 817.22-(1)-TLP

1. The applicant shall justify, provide methods, reflect on the coal fines, etc., as to why OM is high and EC is so low. Samples shall be obtained and rerun since the validity of data presented in the applicants response to the Draft TA is still in question. This shall be accomplished within 90 days of permit approval.

Stipulation 817.22-(2)-TLP

2. Exhibit IIA must be amended within 90 days of permit approval to reflect the revised volume of substitute soil necessary to remedy the soil deficit. This figure is 38,000 cubic yards lower than it should be.

UMC 817.23 Topsoil: Storage

Storage of topsoil will be on stable surfaces isolated from the danger of surface erosion by overland flow. Berms will be placed at the toe of the stockpile to prevent loss of soil to runoff from the stockpile itself. Topsoil stockpiles will be mulched at 2,000 lbs/ac and seeded to afford adequate protection. Mulch will be anchored and/or covered with anchored netting (pages II-3 and 4, DOC Response).

As a point of clarification regarding U. S. Steel's comment in the December 30, 1983 DOC Response under UMC 817.23 (page 12), the reference to 784-13 was to the text of the March 20, 1983 ORP rather than the June 30, 1983 document. In any case, the applicant has adequately addressed these concerns in Appendix II.

Compliance

The topsoil storage plan as detailed by the operator is in compliance.

Stipulations

None.

UMC 817.24 Topsoil: Redistribution

In Appendices I and II of the DOC Response, the operator provides the various replacement depth of coarse refuse (capillary barrier) and topsoil/substitute material redistribution depth for any given area to be reclaimed. Prior to soil redistribution, areas will be graded to final contours (UMC 784.13 in the Operations and Reclamation Plan). All affected areas will be ripped to a two foot depth.

The operator will utilize approximately 5.5 inches of a homogeneous mixture of the upper 2.0 feet of the topsoil borrow area will be utilized to reclaim the topsoil borrow area. (see page I-4 and II-5, 6-26-84 revised TA Response)

Compliance

Compliance will be achieved through operator adherence to the following stipulations.

Stipulations 817.24-(1-2)-TLP

1. Within 90 days of permit approval the applicant must fully describe the mixing procedure including techniques and implements necessary to achieve uniform mixing of materials on a scale this large.

2. Within 90 days of permit approval the methods proposed to be tested to preclude loss of topsoil through voids in the coarse refuse area (page 4, January 1984 "Revegetation Test Plots") should be expanded upon to describe specific test depths of cover necessary to prevent soil loss into voids.

UMC 817.25 Topsoil: Nutrients and Amendments

Prior to topsoil redistribution, the operator will perform random soil sampling (at least one sample per reclaimed acre) to ascertain nutrient needs at the time of reclamation (II-4, DOC Response). Soil tests to be performed are described in 2.3 on page II-1 (DOC Response). As a minimum and for bonding purposes, a basic soil fertilizer application is described in Appendix H of the ORP. The application will be modified as per soil test results and according to guidelines issued by the regulatory authority. Should nutrient deficiencies manifest themselves (plant symptoms), maintenance applications of fertilizer will be provided by the operator (II-4, DOC Response).

Compliance

The applicant complies with the requirements of this section.

Stipulations

None.

UMC 817.41 Hydrologic Balance: General Requirements

Existing Environment and Applicant's Proposal

The applicant has proposed methods in the Permit Application Package by which mining activities will be conducted to minimize changes to the hydrologic balance within and adjacent to the permit area. Those proposals will be presented throughout this section and the following sections (UMC 817.41-.57).

The applicant proposes to control surface runoff from disturbed and undisturbed areas by using a combination of diversions, berms, channels, culverts and sedimentation ponds as discussed under TA Sections UMC 817.43-.46 and 817.49. In all instances, undisturbed area drainage will be separated from disturbed area drainage.

Surface water monitoring plans have been implemented and will continue to operate to detect any impacts from mining operations on the surface water system as discussed under TA Section UMC 817.52.

Impacts to ground water systems have been and will continue to be analyzed through on-going studies. Monitoring and sampling will help the applicant keep impacts to a minimum by detecting changes in water quality or quantity that could result from operations. Plans illustrating the monitoring schedule and showing the quality and quantity of water at sampling sites have been supplied in the mine plan (pp. 783-7 to 783-10 Operating and Reclamation Plan and pp 783-13 to 783-25, ACR Response).

The applicant has suggested plans to ensure that receiving streams will be in compliance with applicable State and Federal water quality regulations as discussed in TA Section UMC 817.46.

The applicant has submitted plans for sedimentation and control ponds depicting their capacity to store the expected sediment and runoff volumes of a 10-year, 24-hour precipitation event plus any volumes of water used in the preparation plant. All calculations and diagrams have been presented showing the architectural stability of the embankments and routing structures.

Riprap sizing calculations have been performed and submitted to the regulatory authorities (Appendix B, ACR Response) for areas where channel velocities are excessive. Plans to protect stream channels utilizing the calculated size riprap will be implemented with construction of the ditch upon reclamation.

The applicant has proposed and implemented preventative measures such as chemical testing of water, soil and rock material and utilizing hydrologic structures and limiting contamination to the hydrologic system from any acid- or toxic-forming materials (Appendix III, DOC Response).

Compliance

The operator has proposed designs utilizing best technology control practices to minimize changes to the prevailing hydrologic balance in both the permit and adjacent areas. The following TA sections (UMC 817.42-.57) describe specific design details for the hydrologic facilities proposed.

The applicant's proposals will meet the general requirements for this section when the stipulations in the following sections are met.

Stipulations

None.

UMC 817.42 Water Quality and Effluent Limitations

Existing Environment and Applicant's Proposal

All surface drainage from the Wellington Preparation Plant will be treated in catchment basins, silt fences or filtered through large areas of undisturbed land characterized by a low slope, many natural depressions and adequate cover of native vegetation (50-60 percent) to minimize discharges off the permit area which would exceed effluent limitations (page 784-25, B-45, Map F9-177, Appendix B). A system of four ponds will treat drainage for 267.5 acres of disturbed area. These ponds serve a dual function as plant water clarification and holding areas during normal operations of the plant. Water in the Wellington area is a valuable resource with only six to eight inches of annual precipitation (NOAA Atlas). Therefore, any water collected in the catchment ponds as the result of rainfall is incorporated into the plant water washdown system via the use of pumps and is utilized in the operation of the plant. Additionally, no discharge is expected to occur from the plant disturbed area for the 25-year, 24-hour event as all ponds are sized for total containment of this event (page 784-25, B-7, B-8 of ACR Response).

The three ponds on the west side of the Price River which control drainage from the disturbed area surrounding the location of the plant facilities have been designed to handle three years of predicted sediment accumulation and total containment of the 25-year, 24-hour precipitation event (calculations in Appendix B, ACR Response).

The applicant has proposed to maintain and leave in place one pond on the east and two ponds on the west side of the Price River following cessation of operations for drainage control during reclamation. These ponds will be removed only after the disturbed area has been restored and the reclamation requirements of UMC 817.111-.117 have been satisfied (page 16, DOC Response). Additionally, a postoperation water monitoring program consisting of sampling at the inlets to the ponds for parameters required by State and Federal effluent limitations at the time of reclamation will be conducted to insure compliance with UMC 817.46(u) before pond removal (page 16, DOC Response).

Drainage from 123.5 acres of disturbed land will be collected and allowed to flow and spread across an area of 314.06 acres which will act as a natural sediment filter. The sediment filter areas have very low slopes (0-1 percent) with many natural depressions that act as sediment traps. Vegetation cover of these areas has been reported to be 50-60 percent. Field reconnaissance conducted by the applicant and the Division of Oil, Gas and Mining for the

past three years has resulted in no observations of significant erosion problems and little to no evidence of historical erosion. No areas of channelized flow across the filter areas have been observed indicating the flow is indeed spreading and largely infiltrating in this area and the filter area is functioning as expected.

The operator indicates that sampling this area for verification of filter function is not feasible as sampling points where flow has collected in large enough volumes for sampling do not exist. Division observation on-site confirms this problem.

Silt fence treatments for two areas have been proposed for drainage treatment. The area surrounding the pumphouse on the east bank of the Price River is approximately one acre in size and has a predicted runoff volume of 0.063 acre-feet for the 10-year, 24-hour precipitation event.

An area of 31 acres near the coal refuse pile on the west side of the permit area will utilize a large ditch and silt fence for drainage treatment. This area has broad, flat topography (0-1/2 percent) and the low slope of the ditch essentially results in that structure functioning as a catchment area. The location of the silt fence is shown on Map F9-177, cross-section K-K'. The volume of the ditch has been calculated to be 1.03 acre-feet (AF) with runoff from the area estimated to be 1.17 AF.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Groundwater Flow, and Ephemeral Streams

Existing Environment and Applicant's Proposal

The applicant has provided plans to control overland flow of runoff from disturbed and undisturbed areas within and adjacent to the permit area. A combination of diversions, channels, culverts and energy dissipators will be utilized to separate disturbed area runoff from undisturbed area runoff, control erosion and direct runoff away from coal processing activities. All designs and calculations are presented in Appendix B, ACR Response, July 7, 1983.

During operations three diversions (2 temporary and 1 permanent) are used. The southwest diversion ditch collects and routes approximately 281 acres of undisturbed runoff away from the facilities area to a natural low area where larger storm events cause a pond to form. Sizing calculations for the diversion ditch have been submitted and show that the ditch is sized to accomodate and transfer the 12.5 acre-feet volume of runoff expected during a 10-year, 24-hour precipitation event. The south drainage is not developed as a ditch but is established because the embankment of the railroad tracks diverts the runoff along the base of the embankment toward the Price River. Runoff from both disturbed and undisturbed areas is transported along this diversion. A silt fence is located in the ditch below the small disturbed area near the cleaning plant which filters out any sediments. As mentioned under TA Section UMC 817.42, the small disturbed area is approximately 13 acres and slopes zero to 1/2 degrees. The disturbed area that drains into the diversion consists of approximately 1 square mile, however, the configuration of the drainage is capable of handling the expected runoff from a 10-year, 24-hour precipitation event.

The drainage ditch is not subject to significant water velocities which would wash out the silt fence. Like the surrounding area, the ditch has only a slight grade which results in a maximum velocity of 2.8 feet per second (during the 10-year, 24-hour precipitation event). It should be noted that approximately one half of the total storm runoff (assuming all the runoff reached the drainage ditch) can be contained in the ditch from section K-K' upstream while maintaining 0.3 feet of freeboard. The Geofab silt fence has a capacity to pass some 470 gallons per square foot of fence. Specifications for this silt fence are included on page B-27 (Appendix B, ACR response).

These diversions will be reclaimed after operations cease at the plant site (page 784-14, ORP).

A permanent diversion presently exists in the northeast portion of the permit area which diverts water passing from fields (reaches 1 & 2 map A9-1429 Technical Revision No. 1) north of the refuse ponds into the Price River. The diversion is sized to pass the peak flow generated during a 100-year, 24-hour (53 cubic feet per second) precipitation event. Calculations and plans have been submitted by the applicant to illustrate the reliability of the diversion. This diversion will be left upon cessation of operations (page 784-41, ACR Response). The operator has placed rip rap along various lengths of the diversion and used grout to stabilize the finer sized rip rap material. As outlined in U. S. Steels response to NOV#84-2-12-1, the operator will leave the grouted rip rap intact during and after reclamation. The operator has shown that channel velocities generated during a 100-year, 24-hour precipitation event are below 5 feet per second and are essentially non erosive whether the channel is rip rapped or not.

Plans have been submitted for another permanent diversion along the east side of the refuse ponds. The diversion ditch will be constructed prior to reclamation of the ponds. This ditch will discharge into the Clear Water Ponds during reclamation. The impoundment will not have to be altered. When revegetation is successful the Clear Water Pond will be reclaimed and the diversion ditch extended to discharge into the Price River.

Calculations and plans have been submitted to ensure that the ditch will adequately contain and control the peak runoff of a 100-year, 24-hour precipitation event (Appendix B, ACR Response).

Undisturbed runoff drains from 310 acres in the northwest end of the permit area and passes through culverts which cross under the railroad tracks and then out onto a vegetated filter which is graded to preclude runoff. All culverts other than those crossing under Denver and Rio Grand Western tracks have sizing calculations provided by the applicant to show their carrying capacity and capabilities of providing transport for a 10-year, 24-hour precipitation event. All culverts underlying the Denver and Rio Grand Western tracks are under control of that company and cannot be controlled by the applicant. The culverts under D&RGW's track are of such size to pass the 10-year, 24-hour precipitation event. The applicant has stated that as of 1958 there has been no breaching of any culverts. All culverts except D&RGW's (Map E9-3342) will be reclaimed along with the railroad tracks. The long term plans for D&RGW's railroad tracks are unknown (page 784-14, ORP).

The applicant has provided a freeboard of at least 0.3 feet for all diversions. Velocities of overland flow and within channels are very low (2.6 fps) due to the almost flat topography of the area, hence there is almost no erosion.

Compliance

The applicant has submitted appropriate plans to control overland flow, to protect facilities and property and prevent erosion. The submitted plans are accompanied by designs which fulfill the criteria established in the regulations.

In reviewing U. S. Steels proposal to leave the grouted rip rap intact in the permanent diversion on the north east side of the refuse ponds the Division finds that there should be no adverse impacts from these measures and approves these procedures in accordance with UMC 817.43(b). Emplacement of the grouted rip rap will undoubtedly provide stability and protection to the ditch banks. Deterioration of the grouted rip-rap will gradually occur, but this should not have adverse effects either to the diversion channel or waters down stream, since velocities are low and non-erosive.

Stipulations

None

UMC 817.44 Stream Channel Diversions

Existing Environment and Applicant's Proposal

As previously mentioned under TA Section UMC 817.43, the applicant plans to reclaim the temporary diversions intercepting the ephemeral stream flow along the west and southwest sides of the operations area. Two permanent diversions will remain on the east side of the property to divert runoff from irrigated lands and ephemeral stream channels away from the reclaimed refuse ponds (page 784-10, ORP).

A stream channel diversion (Milner Diversion Dam on Map F9-177, 1 of 2, December 28, 1983) exists in the Price River which diverts streamflow into a ditch that temporarily crosses the permit area prior to crossing under D&RGW's railroad tracks and flowing into fields that used to be farmed and are now used for grazing. This diversion is not associated with the proposed operation other than crossing the property and the operator claims no control over the structure.

A temporary stream diversion (see Map E9-3430) exists at the southern end of the property which diverts water from the Price River into a sluiceway which then directs it to the pumphouse where it is pumped to the clear water pond. The applicant proposes to dismantle the diversion and accompanying structures upon cessation of operations and restore the stream channel to its natural shape.

Compliance

The applicant complies with all parts of this section.

Stipulation

None.

UMC 817.45 Hydrologic Balance: Sediment Control Measures

Existing Environment and Applicant's Proposal

The disturbed area drainage will be controlled and treated at the Wellington site using a system of diversions, berms, sediment ponds (which also serve a dual function as the plant operation water clarification system), native vegetation filters and silt fences (Appendix B, ACR Response; page 6, 14, 15, 16 and 17, DOC

Response). No untreated discharges will occur off the permit area as a result of the 25-year, 24-hour event. Undisturbed drainage to the west and north of the permit area is prevented from mixing with disturbed drainage by diversion ditches constructed along the coal refuse/west boundary and the north diversion dike, respectively (Map F9-177, Volume 2). No underground activities occur at the site and as such, no mine or underground discharges will occur at the site.

Sediment production at earth embankments, road cuts and earth or soil covered impoundments will be minimized by implementing contemporaneous reclamation treatments. The areas will be broadcast seeded and a straw mulch applied and anchored (page I-6, DOC Response). Weekly inspections at the sites will be conducted to note and correct any evidence of erosion rills or gullies (page 18, DOC Response). To date, the operator reports that no evidence of erosion gullies have been observed.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.46 Hydrologic Balance: Sedimentation Ponds

Existing Environment and Applicant's Proposal

Sediment catchment basins at the Wellington Site serve a dual function as holding basins for the plant water clarification system. Three basins treat runoff from disturbed lands on the west side of the Price River and the large volume Refuse and the Clear Water ponds serve that function on the east side of the river. The Auxillary Pond and the Road Pond are connected via a culvert and treat drainage for the 6.37 acres of disturbed land surrounding the plant and office facilities (see figures C9-1285 and E9-3427). The Heat Dryer Pond treats drainage from a small area (approximately 1 acre) near the plant dryer. (See Map E9-177 for delineated acres contributing to ponds). The reader is referred to appendix B, of the Response to ACR document for supporting calculations for these ponds.

Using the SCS curve number methodology the estimated 10-year, 24-hour runoff volume from the 6.37 acre drainage to the Road and Auxillary ponds were calculated to be 0.53 acre-feet. The volume estimated for the 25-year, 24-hour event was 0.7 acre-feet (page B-7, Response to ACR). The estimated 10-year, 24-hour events for the heat dryer pond are 0.09 and 0.11 acre-feet, respectively. The operator has shown the capacities of the road/auxillary pond

system to be sufficient to hold runoff for the 25-year, 24-hour event, the plant discharge in the event of a plant failure and the operating volume of water in the pond (page 6 of the DOC response summarizes the capacities). The heat dryer pond has a capacity of 63,000 gallons which is 13,000 gals in excess of the volume required for runoff and sump overflow volume. Pumps operating at the Auxillary and Heat Dryer ponds will maintain water levels in the ponds below the maximum calculated levels during plant operation, and in the event of plant shut down and complete washdown the ponds are shown to be adequate for both dump operating and runoff (25-year, 24-hour) volumes (page 6, DOC Response; Appendix B, Response to ACR). A stage-volume curve for the Road pond is included in the appendix to the TA for reader clarification.

The sediment production for the disturbed areas was estimated using the Universal Soil Loss Equation (USLE). Due to the very low slope at the site (0-1%) the predicted sediment yields are typically low (less than 200 ft³) (pages B-7, B-8, Response to ACR).

Pumps at the ponds will serve as dewatering structures to maintain volume in the ponds for the runoff event. The applicant has been conservative in the estimation of storage volume for the ponds as an additional volume of dead storage exists in each pond. The Heat Dryer, Road and Auxillary Ponds are all incised and no embankments will be constructed.

Disturbed land drainage on the east side of the Price River is directed towards the Refuse and Clear Water ponds which also serve as the plant water clarification system. The ponds are large in area in relation to the disturbed lands and as such the estimated runoff from these areas is of minimal concern in the design of the ponds. The operator has shown the ponds to be adequate for the clarification functions and runoff control and treatment (Technical Revision #1). Field observations and photographs submitted by the applicant (page 784-14, ACR response) have shown the clear water embankment to be vegetated and stable. MSHA approval for all three ponds has been obtained by the applicant. Discharge structures for the Refuse ponds have been designed for the 100-year, 24-hour peak flow event, which is conservatively oversized for the requirements of UMC 817.46(i), (25-year, 24-hour event). The reader is referred to the Technical Revision #1 document for specific design details for the outflow structures.

Compliance

The applicant's proposal is sufficient to comply with the requirement of this section.

Stipulation

None.

UMC 817.47 Hydrologic Balance: Discharge Structures

Existing Environment and Applicant's Proposal

Diversions and erosion protection at the plant site are discussed under Section UMC 817.43 of this document. Discharge structures for the sedimentation ponds are proposed (see discussion TA Section UMC 817.56) to be installed at the time of reclamation (page B-46, Response to ACR). The overflow structure (12-inch PVC pipe) for the Road pond has been designed to pass a predicted peak flow of 6.9 cfs. Using the University of Kentucky's Sedimot II computer model, the regulatory authority calculated this peak (25-year, 24-hour) to be 3.96 cfs. The discharge structure is therefore over designed to pass the required peak event. The velocity at the outlet of this structure has been calculated to be nine fps. This high exit velocity will be controlled by discharging this pipe to the 48-inch corrugated pipe which flows beneath the existing railroad (to remain in place during reclamation) (page B-49, Response to ACR).

The peak flow for the heat dryer area has been calculated to be less than 1.0 cfs and the proposed 12 inch discharge structure will adequately pass this flow with no headwater depth. The calculated exit velocity of 6.73 fps will discharge into a 48-inch corrugated metal pipe which will dissipate the energy and reduce the flow velocity to less than five fps (page B-49, Response to ACR).

Compliance

The applicant's proposal complies with this section.

Stipulations

None.

UMC 817.48 Acid- and Toxic-Forming Materials

Existing Environment and Applicant's Proposal

The applicant has submitted chemical analyses of the slurry ponds and coal refuse pile (Appendix E, ACR Response) to illustrate the nihility of acid-forming and toxic materials for these areas.

No other acid or toxic materials are known to exist on site.

Compliance

The applicant has identified the areas of potential acid-forming and toxic-forming materials. They are the upper and lower refuse ponds and the coarse refuse pile.

Representative chemical analyses of these areas have been submitted by the operator (Appendix E, ACR Response). The analyses show no acidic levels or toxic constituents in sufficient quantity to cause degradation to revegetation or animal life.

The pH for the above locations ranges between 7.6 to 8.4, a common range, when waters in contact with the Mancos Shale members are buffered by the bicarbonate/carbonate cations released in aquatic situations.

Although there appears to be some high concentrations of some constituents, those constituents do not pose adverse contamination problems. All potentially toxic constituents are present in very low concentrations to the extent that no adverse or toxic effects will be realized.

U. S. Steel has supplied the required information to classify the acid- and toxic-forming materials presently existing at the site. Well and stream monitoring (the Price River) will also be conducted to detect any changes in ground water and surface water quality.

Stipulation 817.48-(1)-DD

1. The applicant will be required to submit to the regulatory authority a chemical analysis of each individual coal seam that will be processed at the plant. The analysis(es) shall depict all acid- or toxic-forming constituents and be submitted on an annual basis, or at any other time required by the regulatory authority, if there is reason to believe that the quality of coal has degraded sufficiently to cause acidic or toxic effect.

Run of the mine coal from newly mined seams (also new coal mines) shall be sampled and the analyses submitted to the regulatory authority within 30 days of processing of the coal so that any acidic or toxic constituents can be identified.

UMC 817.49 Hydrologic Balance: Permanent and Temporary Impoundments

Existing Environment and Applicant's Proposal

Three temporary impoundments in addition to those discussed under TA Section UMC 817.46 exist at the plant site for use as a plant water clarification system. These are the Upper Refuse, the Lower refuse, and Clear Water ponds depicted on map F9-177. The Upper and Lower Refuse ponds will be removed upon reclamation and

the Clear Water pond will be left in place as a sediment treatment pond until reclamation is complete. At that time that pond will be removed and the area reclaimed.

Geotechnical stability analyses have been performed for these impoundments and they have been shown to be stable with safety factors ranging from 1.2 to 2.2 (Appendix C, ORP). The side slopes of all embankments are 2v:1h (Fig 12-14, Rollins, Gunnel, Brown report, ORP).

The embankments have been certified by Rollins, Gunnel and Brown (Appendix C, ORP) and the applicant has committed to annual certification inspections for each embankment. A sample form for this certification is included in the ORP (page 18, DOC response). The impoundments will be inspected weekly for hazardous conditions, water levels, erosion, seepage slumps, cracks, function of spillways, and current freeboard (P. 18A, DOC response). The embankments meet or exceed the criteria of 30 CFR 77.216(a) and are approved and regulated by MSHA. Plans for enlarging the structures have been submitted to the regulatory authority for approval in a timely manner by the applicant. This modification (see Technical Revision #1) has been approved by the regulatory authority and will be implemented at the site when economic and plant capacity needs so require.

Compliance

The applicant complies with this section.

Stipulations

None

UMC 817.50 Underground Mine Entry and Access Discharges

This section is not applicable since there will be no underground entries.

UMC 817.52 Surface Water and Groundwater Monitoring

Existing Environment and Applicant's Proposal

The applicant has submitted surface water monitoring data to establish the baseline characteristics of the area. Information describing the groundwater aquifers and the predicted effects the operation could have on the aquifers and surrounding area has been supplied. In evaluating this information the Division estimated potential groundwater and surface water impacts occurring from seepage of leached refuse into underlying aquifers and the nearby

Price River and proposed a more intense study to evaluate total effects. In response to the concerns the applicant drafted and is now instituting a new monitoring plan to evaluate the extent and total effects at the plant and to ensure through the collection of ground water samples and analysis of the samples for potential contaminants that the impacts on the surrounding aquifer will not be excessive.

The Auxillary pond, Road ponds and new Dryer ponds which receive and provide support water to the plant and receive surface runoff that originates on the plant site (disturbed area) are designed for total containment of the 10-year, 24-hour precipitation event as well as all plant discharges. Hence no discharge of surface water is anticipated from the plant site and no NPDES permits are needed for these ponds (Appendix B, ACR Response).

The Upper Refuse pond, Lower Refuse pond and the Clear Water pond have also been oversized to contain the runoff and sediment load greater than a 10-year, 24-hour event (See TA Sections UMC 817.42 and 817.46) so that no NPDES permits are needed for these ponds.

No treated or disturbed surface flow will leave the property. Three sources could potentially contribute contaminants to the shallow aquifers and possibly to the Price River. These areas include the coarse refuse pile, the road and auxilliary ponds, and the refuse ponds. Precipitation percolates down through these structures eventually reaching the shallow alluvial groundwater system. Using the average annual rainfall (9.68 inches) for the Price area, the maximum proposed extent of the pile (22 acres) and assuming the total amount of precipitation percolates through the pile, an annual volume of 17.5 acre feet of leachate could be contributed.

In assessing the effect from water seeping from the ponds on the property the applicant established a water budget for the 1981 year. The budget could not account for 447.3 acre-feet of water which is assumed to be entering the shallow groundwater aquifer from the ponds where the water would dissipate in an unknown distance down gradient where it would eventually come in contact with the Price River.

In comparing conservative figures for estimating the expected water quality reaching the river to the water quality of the Price River itself an expected increase in dissolved solids of about 10 milligrams per liter is shown, a negligible effect.

As stated under TA Section UMC 817.48, chemical analyses of the refuse sites presently shows no toxic constituents present in substantial quantities to cause contamination to surface or ground waters.

The proposed monitoring plan will incorporate new surface sites and shallow groundwater sites at strategic locations to detect the water quality of the shallow groundwater aquifer and the Price River and to ensure that excessive contamination does not occur. The new proposed monitoring sites can be seen on Map 1 of the DOC Response.

Compliance

The information the applicant submitted along with the schedule for future monitoring is sufficient to determine this section complete.

Stipulations UMC 817.52-(1)-DD

1. The applicant will be required to begin initiation of the proposed monitoring plan immediately upon approval of the mine plan, and have the plan fully implemented within 120 days of permit approval.

UMC 817.53 Transfer of Wells

Existing Environment and Applicant's Proposal

Other than the shallow groundwater wells that will be used to monitor water quality, the only well on the property is located near the pump house which is used to reduce the water level in the alluvium adjacent to the pumphouse so that it does not flood. The applicant does not plan to transfer any of these wells, but does plan to reclaim them according to specifications established by the regulatory authorities (under UMC 784.13, page 7, DOC Response and page 784.23, ACR Response).

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.54 Water Rights

Existing Environment and Applicant's Proposal

The applicant owns 10.08 cubic feet per second of water diversion rights in the Price River and leases 10 cubic feet per second from the sewer plant outfall. The make-up water required for plant operation is approximately four cubic feet per second. The balance of the water rights are available in the event the operators actions result in elimination or interruption of water rights of legitimate water users.

The applicant has submitted a statement committing to replacing all water rights disrupted.

Compliance

The applicant complies with this section.

Stipulation

None

UMC 817.55 Discharge of Water into an Underground Mine

This section is not applicable since no mining will take place on-site.

UMC 817.56 Hydrologic Balance: Postmining Rehabilitation of Sediment Ponds, Diversions, Impoundments, and Treatment facilities

Existing Environment and Applicant's Proposal

Upon cessation of operations at the plant site the refuse impoundments will be reclaimed with the exception of the Clear Water pond which will be left in place to serve as a sedimentation pond for sediment control during reclamation (page 784-28i, page B-45, B-46, Response to ACR). The Auxillary pond will be reclaimed and regraded with the reclamation of the plant facilities area. The Heat Dryer pond and the Road pond will be left at the site to serve as sediment control for that area. The diversion ditch along the west side of the permit area will remain to preclude undisturbed drainage from coursing across the regraded area therefore reducing sediment production from the disturbed area. A permanent diversion designed for the 100-year, 24-hour precipitation event will be installed at the east boundary of the reclaimed refuse ponds area to divert undisturbed drainage from these newly graded and seeded areas (page B-46, Response to ACR). This diversion will discharge into the Clear Water pond during the reclamation period to reduce contributions of sediment during diversion construction and riprap stabilization. When the clear water pond is removed the diversion will be constructed to extend to discharge into the Price River. The Clear Water pond has a capacity of three times the predicted runoff and sediment shown for the 100-year, 24-hour event from the reclaimed area and the discharge from the permanent diversion described above (page B-58, Response to ACR).

Discharge structures adequate to pass the 25-year, 24-hour event will be installed at the Heat Dryer and Road pond due to the removal of the pumps (at reclamation) that act as dewatering devices during the operational phases of the plant (page B-46, Response to ACR). A

discharge/decanting structure will be installed at the Clear Water pond to act as a dewatering device for impounded waters after a minimum of 24 hours detention time.

The applicant has submitted a postoperation water monitoring plan to insure the criteria of UMC 817.46(a) are met before pond removal. Quarterly samples will be taken of the drainage entering all ponds (page 16, DOC Response). The ponds and west diversion will be removed and reclaimed when water quality limitations have been met and the disturbed area is adequately revegetated to the performance standards of UMC 817.111.117 (page 16, DOC Response). Silt fences will be properly installed to control sediment during reclamation of the Clear Water pond and embankment area (page 784-28i, Response to ACR).

Compliance

The applicant adequately complies with this section.

Stipulation

None

UMC 817.57 Stream Buffer Zone

Existing Environment and Applicant's Proposal

The applicant has installed structures within 100 feet of the stream channel. As can be seen in diagrams on Map E9-3430 two suspension bridges carrying pipelines, a diversion dam and sluiceway to divert water to the pumphouse and a bridge for an access road have been constructed prior to enactment of the Surface Mining Control and Reclamation Act.

The applicant has placed Stream Buffer Zone signs 100 feet out from the Price River. Upon cessation of the operation all structures except the bridge to the access road will be disassembled and the disturbed land graded and revegetated according to the time table presented in the PAP (pages 784.19 to 784.23, ACR Response). A silt fence or equal sediment control will be used until vegetation is established.

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.61-.68 Use of Explosives

There is no use of explosives at a coal cleaning plant nor any anticipated use of any.

UMC 817.71-.74 Disposal of Underground Development Waste and Excess Spoil and Nonacid and Nontoxic-forming Coal Processing: General Requirements

Existing Environment and Applicant's Proposal

Analysis of the slurry pond coarse and fine refuse (page E-3, Refuse Sample Analysis) shows no presently existing toxic or potentially toxic conditions. All refuse ponds have been analyzed and certified by registered professional engineers (see Technical Revision #1) and also reviewed and approved by the State Engineer and MSHA (page 782-14, ACR Response). The slurry ponds will be covered with a nontoxic layer up to 12 inches deep to prevent upward migration of salts from the coal refuse and covered with six inches of topsoil and seeded upon reclamation (page 784-20, 21, 22, 23 of U. S. Steel's ACR Response).

Compliance

The applicant will be required to meet the stipulation under UMC 817.48 to provide future protection against acid and toxic material contamination. Any contamination will also be indicated in the surface and ground water monitoring program. Detection of contamination from any refuse sources will result in the operator drafting new design plans for conducting contamination control and reclamation procedures.

Stipulation 817.71-.74-(1)-DD

1. The applicant shall commit to submitting new designs for regulatory authority review and approval to satisfy regulations under UMC 817.71-.74 in the event toxic or acidic contamination occurs during future operations. These designs must be submitted within 90 days of discovery of contamination.

UMC 817.81 Coal Processing Waste Banks: General Requirements

Existing Environment and Applicant's Proposal

Coarse refuse has been placed in an area southwest of the plant (Map E9-3342) since the Wellington Plant went into production. The refuse pile has since been inspected by the State regulatory authority and has remained stable since its beginning in the late

1950's. The topography is flat with no water carrying structures underneath. The refuse pile has been analyzed (page E-3, DOC Response) and determined to be nontoxic. The refuse pile will be reclaimed and regraded to conform to State slope guidelines for stability and erosion control, covered with six inches of topsoil, reseeded and revegetated with an approved seed mix (reference pages 784.23, 24 of the DOC Response).

Compliance

Applicant is in compliance with the section.

Stipulations

None.

UMC 817.86-.88 Coal Processing Waste Banks

Not applicable.

UMC 817.89 Disposal of Noncoal Wastes

Existing Environment and Applicant's Proposal

Noncoal waste is accumulated in the designated area shown as EE on Map E9-3341 and disposed of in the Carbon County Landfill.

Used oil and oil drums are stored separately in area FF on Map E9-3341. Surface runoff from this site is minimal and an oil spill safety berm surrounds this storage facility. Empty drums are eventually shipped off-site for scrap metal or reused for operations.

Excess wood is stored in area DD (Map 3341). A permit to burn 3,000 cubic yards of this wood was received from the State Department of Health, Air Quality Bureau on March 19, 1984. In the future, accumulated urewq wood will be taken to a landfill for disposal.

Compliance

The applicant is in compliance with this section.

Stipulation

None.

UMC 817.91 Coal Processing Waste: Dams and Embankments

Existing Environment and Applicant's Proposal

The upper refuse dike, lower refuse dike and clear water dike were constructed of coarse coal refuse prior to SMCRA.

A stability analysis was conducted on all three dikes in March 1978 by the professional engineering firm of Rollins, Brown & Gunnell of Provo, Utah (ACR Response). The dams were certified to be within State guidelines for factors of safety.

In March 1983, another stability analysis was conducted by Rollins, Brown & Gunnell to verify stability of the upper, lower and clearwater dikes in order to raise the height of these dikes (Technical Revision #1). The raising of the dikes was approved by Rollins, Brown & Gunnell and the State Engineer's Office.

The coarse refuse has been analyzed (page E-3) and shown to be nontoxic.

Compliance

The refuse dikes are in technical compliance with the 800 regulations.

Stipulation

None.

UMC 817.92-.93 Coal Processing Waste

Not applicable.

UMC 817.95 Air Resources Protection

Existing Environment and Applicant's Proposal

The Wellington Coal Cleaning Plant is not located in a non-attainment area. Therefore, the applicant has not installed an air monitoring program at the plant.

Fugitive dust emissions are reduced at the cleaning plant by the following measures:

1. The road from the main gate to the plant parking lot and the parking lot is a blacktopped road.
2. The speed of vehicles in the plant area is restricted.

3. The travel of unauthorized vehicles on other than established roads is restricted.
4. The plant receives coal in railroad cars and ships in railroad cars. The operator does not ground store raw or clean coal at the coal cleaning plant.
5. The clean coal loading chute is telescoping to reduce the fall distance when loading into the railroad cars.
6. The applicant pumps the major portion of the plant refuse to the disposal area using water as a transport medium.

If it should become necessary to control fugitive dust as a result of cleaning plant operations, the applicant has committed to sprinkle or chemically stabilize source areas, or otherwise control fugitive dust through the best available control technology (Operation and Reclamation Plan, page 784-35).

Since the plant has been in operation since 1958, no Air Quality approval order for the facilities is necessary. However, an Approval Order was received for a 1981 modification to remove coal fines from settling ponds (letter attached to TA). The applicant applied to the Utah Air Quality Bureau on December 23, 1983 for an "Open Burning Permit" to burn 3,000 cubic yards of wood material accumulated at the plant site. Approval was granted March 19, 1984 for a one-time burn during a favorable clearing index of 500 or more.

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.97 Protection of Fish, Wildlife and Related Environmental Values

Existing Environment and Applicant's Proposal

The permit area of the Wellington Preparation Plant is dominated by the shadscale and greasewood communities of the Upper Sonoran Life Zone (See Appendix H for a quantitative description of these communities). This life zone may provide potential habitat for about 246 vertebrate species of wildlife, including five fish species, six amphibian species, 15 reptile species, 176 bird species and 44 mammal species. However, wildlife populations are generally considered low on the permit area. The operator has consulted the

Utah Division of Wildlife Resources (DWR) regarding low-level wildlife studies within and adjacent to the permit area. The results of this consultation are found in the ACR Response, Appendix F.

The Price River, which bisects the permit area, is ranked by DWR as "limited value" to Utah's Fishery Management program, supporting only one "high interest" specie of fish, namely the channel catfish (Appendix F, pages 4 and 5). The riparian zone associated with the Price River (ca 39 acres within the permit area) is ranked as "critical value" to local wildlife populations.

Surveys for Threatened or Endangered Plant or animal species were conducted during the summer of 1983 with no Threatened or Endangered species being observed. Although the permit area is within the range of several raptor species such as the Bald and Golden Eagles, suitable habitat generally is non-existent within the permit area (Appendix H, page 11 and Appendix F).

The area affected by the Preparation Plant includes approximately 392 acres, most of which were disturbed during the late 1950's. The only future disturbance planned at this time is to increase the coarse refuse pile by about 8 acres and a topsoil borrow area (for final reclamation) of about 69 acres (PAP, Map E9-3339).

The tailings ponds were located in an ephemeral drainage which has been permanently diverted. Thus any riparian habitat which may have existed (pre 1958) is permanently lost. Reclamation plans, however, will establish a higher quality forage and cover for wildlife than the pre-existing greasewood community provided (see Reclamation Plan, DOC Response, Appendix I). Also, these ponds are currently providing nesting sites and habitat for local waterfowl populations.

The operator's wildlife protection and mitigation plans are discussed on pages 22 and 23 of the Determination of Completeness response (January 3, 1984). This plan includes provisions for an employee education plan, conducting operations in a way which minimizes future impacts to wildlife, reclamation with species that will provide quality forage and cover to wildlife and reporting to the regulatory agency, the presence or observance of any Threatened or Endangered plant or animal specie.

Compliance

Although not constructed as per current raptor protection technology per SE, existing power transmission lines were surveyed on March 24, 1982 by the U. S. Fish and Wildlife Service. Results of this survey (attached to the TA) indicated that existing poles

were not posing a hazard (no use) to raptors due, in part, to the close proximity to the preparation plant and the poor habitat conditions near the site.

Future disturbances will be conducted to minimize the impact to wildlife habitat (DOC, page 23).

Employees will be instructed in ways to minimize impacts to wildlife during daily operations. The revegetation plan is designed to, and will enhance the disturbed areas for wildlife habitat by providing a better quality forage (see Reclamation Plan, DOC Appendix I and DOC page 22).

Persistent pesticides will not be used within the permit area (DOC, page 23).

The DWR has recommended that the company retain the clearwater pond for a warm water fishery, thus serving as mitigation for riparian areas lost due to the slurry ponds and as an enhancement feature in the post-mining land-use (see letter dated January 24, 1984 in Appendix A). This action is not considered as part of this analysis, however the company is currently investigating this proposal. Should U. S. Steel accept DWR's proposal, the permit would need to be modified at that time.

In summary, the operator's plan will comply with the requirements of this regulation.

Stipulations

None.

UMC 817.99 Slides and Other Damage

Existing Environment and Applicant's Proposal

The applicant has not addressed the requirements of this regulation in the PAP.

Compliance

The applicant does not comply with this section because he has not committed to notify the Division promptly of any slide which has a potential adverse effect on public property, health, safety or the environment.

Stipulation 817.99-(1)-SL

1. Within 30 days of receipt of Final Permit Approval from DOGM, the applicant must commit to notifying DOGM within 10 days of the occurrence of a slide which has potential for adverse effect on public property, health, safety or the

environment. The applicant must also commit to comply with remedial measures required by the regulatory authority to reduce or eliminate the potential adverse effect of such a slide.

UMC 817.100 Contemporaneous Reclamation

Existing Environment and Applicant's Proposal

Currently, about 392 acres have been disturbed by the preparation plant operations. All areas of disturbance are required to support the plant operation. Outslopes on earth embankments, road cuts, earth or soil covered impoundments and other similar areas which cannot be permanently reclaimed at this time will be seeded with those species and rates as indicated on Table 16. However, on areas where shrubs are not desirable (i.e., impoundments) only the grasses and forbs will be used. All areas seeded will be mulched with 2,000 pounds of straw per acre (DOC Response, Appendix I).

Compliance

When the operator determines that an area is no longer needed for operations, it will be reclaimed as per the final reclamation and revegetation plans. Earthen covered structures as indicated above will be revegetated using the grasses, forbs, and where appropriate, shrubs on Table 16 at the indicated rate of application (DOC Response, Appendix I, pages 5 and 6).

Additionally, some of the refuse dikes are constructed of coarse slurry material (minus 1.25 inch rock) which precludes wind or water erosion. Thus they will not be vegetated during the interim of plant operations. The applicant's plan complies with this section (DOC Response Appendix I, page 6).

Stipulations

None.

UMC 817.101-.106 Backfilling and Grading

Existing Environment and Applicant's Proposal

The topography in the area of the Wellington Preparation Plant is relatively flat with slopes ranging from one to three percent.

The operator will grade all areas to be reclaimed along the contour as presented on Map E9-3342 of the ORP (UMC 784.13). Compacted materials and areas where slopes exceed 5h:1v will be ripped to two feet to preclude slippage surfaces and to enhance root penetration. Mechanical treatments such as pitting and gouging will be performed to encourage water infiltration (I-2, DOC Response).

According to present plans at least one foot of coarse refuse (more as specified in Appendices I and II of the DOC response) will be provided to act as a capillary barrier covering the highly saline lower refuse pond on the hypothesis that this thickness will be adequate to mitigate against upward salt migration (see pages 2 and 5, Draft TA Response March 29, 1984). This will be the subject of a test plot treatment. An annual monitoring program will be conducted to ascertain salt movement and concentration (see page 24, Appendix H, October 1983). Parameters to be monitored include pH, SAR and EC (see page 3, Draft TA Response March 29, 1984). If this thickness of coarse slurry proves inadequate based on the results of the monitoring program contrasting depths of slurry will be tested in the future. Should test plots indicate a need to revise the depth of coarse refuse employed plans and bonding will be adjusted accordingly (See following stipulation).

The upper refuse pond will be the source of the above material and this material in itself is subject to meeting soils suitability criteria in guidelines issued by the regulatory authority. This material will be available in situ for direct topsoil redistribution. On the other hand, in areas west of the Price River not requiring a capillary barrier, ripping of compacted areas will be performed. Refuse material available to cover the approximately 65 acre Upper Refuse pond is projected to be adequate to provide cover to a depth of 16 feet (Table IA and page I-1, DOC Response).

Compliance

The applicant will be in compliance with this section upon acceptance of commitments and time frames detailed below.

Stipulation 817.103-(1)-TLP

1. The success of test plots shall be evaluated at the time of permit renewal. At that time, information from test plots contained in annual monitoring reports, laboratory data, field evaluations and any other measures necessary shall be weighed to determine the adequacy of the twelve (12) inch coarse slurry capillary barrier. At that time, the applicant shall submit a report to the regulatory authority justifying the twelve (12) inch coarse slurry depth or proposing an alternative depth for approval. Should it be revealed that the depth requires modification, the bonding for this portion of the reclamation plan shall be adjusted accordingly.

UMC 817.111-.117 Revegetation

Existing Environment and Applicant's Proposal

The Wellington Preparation Plant is located within the shadscale and greasewood communities of the Upper Sonoran (Salt desert) life zone of Eastern Utah. Vegetative sampling of these communities was conducted during the summer of 1983 to quantify the existing vegetation adjacent to the disturbed area (see PAP, Appendix H) and is summarized below.

The shadscale community is dominated by Atriplex confertifolia, Hilaria jamesii, Plantago patagonica, Hordeum jubatum and small patches of Oryzopsis hymenoides. Total living cover for this community was determined to be 35% (S.D. = 6.92) (Based on ocular estimates of 15 - 1m² quadrats). Density of woody plants was determined by counting all rooted shrubs within eleven-1000 ft² belt transects with a mean of 80 shrubs per transect (S.D. = 19.57) or 3484 shrubs per acre. Above ground productivity was estimated to be 238.7 pounds (dry weight) per acre by clipping 15-1m² quadrats. Sample adequacy for all parameters was met (or exceeded) at the 80% confidence level with a 10% change in the mean. Range condition was evaluated and determined to be in fair condition.

The applicant has proposed to use the Range Site method for determining revegetation success for this community type. All requirements for using this method were met. Thus, reclamation success at the end of the liability period will be determined by comparing data collected from the reclaimed sites with the reported values for the various parameters of this study.

The greasewood community is dominated by Sarcobatus vermiculatus and Suaeda torreyana. Total living cover was determined to be 76.7% by ocular estimation of 15-1m² quadrats. Woody plant density was estimated to be 3964 shrubs per acre using ten-500 ft² belt transects. Above ground productivity was estimated to be 729 pounds per acre (dry weight) by clipping 45 1m² quadrats. Since this area was determined to be in poor range condition, the operator will establish it as a reference area and will manage this area (by fencing to exclude grazing) to improve range condition. Range condition will be monitored in 3 to 5 years to determine the effectiveness of the management plan. The statistical comparisons for revegetation success for the greasewood community will be made using data collected for the reference area and the reclaimed area at the end of the liability period (DOC Response, Appendix I, page 6).

The proposed revegetation plan is found in Appendix I of the December 30, 1983 Determination of Completeness response. At the time of final reclamation all disturbed areas will be revegetated using those species listed on tables 16 and 17. Those areas east of

the Price River will be broadcast seeded using the mix on table 17. Areas west of the Price River will utilize the seed mix on Table 16 and will be drill seeded with the exception of the coarse refuse pile, which will be broadcast seeded.

All revegetated areas will be "pitted" and mulched to help control erosion and improve moisture retention.

The proposed topsoil borrow area will encompass approximately 69 acres of pastureland. U. S. Steel has provided a plan to collect vegetation data to establish reclamation success standards during the summer of 1984 (prior to disturbance) and will provide a written report to the regulatory agency prior to October 31, 1984 (DOC Response, Appendix I, page 4).

Compliance

1. UMC 817.111 Revegetation: General Requirements

The proposed revegetation plan (DOC Response, Appendix I, December 30, 1983) indicated that all disturbed areas will be reclaimed. The seed mixes proposed will provide a diverse and effective plant community and will enhance the land uses of limited grazing and wildlife habitat by providing higher quality forage and cover. Successful reclamation will be determined at the end of the liability period based on statistical comparison of equality with the appropriate reference area(s) or range site data.

The applicant has also provided plans (DOC Response, Appendix I and July 31, 1984 submittal) to implement revegetation test plots to refine the final reclamation procedures.

2. UMC 817.112 Revegetation: Use of Introduced Species

The applicant does not plan to use introduced species (Appendix H, Tables 16 and 17), therefore, compliance with this section is met.

3. UMC 817.113 Revegetation: Timing

Topsoil distribution and seedbed preparation will be completed as close to the time of favorable seeding and planting as practical. Seeding will occur in late fall to avoid precocious fall germination, overcome seed dormancy, take advantage of spring snowmelt and minimize predation by seed collecting animals (Appendix I, pages 1-4). Since late fall is generally the only time for seeding (without supplemental irrigation) in arid areas of Utah, the applicant's proposal is in compliance with this section.

4. UMC 817.114 Revegetation: Mulching and other Soil Stabilizing Practices

The applicant will use 2,000 pounds of straw mulch per acre on all revegetated areas. The mulch will be crimped to anchor to the soils. All revegetated areas will also be pitted or gouged to aid in erosion control and moisture retention (Appendix I, page 1-4). This plan complies with the requirements of this section.

5. UMC 817.116 Revegetation: Standards for Success

Success of revegetation will be measured using the same techniques as were utilized to collect the baseline data from the range site and reference areas. Statistical comparisons of equality will be made between reclaimed areas and the appropriate range site or reference area at the end of the ten-year liability period. Comparisons of cover, productivity and woody plant density will be made at the 80% confidence level. Revegetation monitoring will occur throughout the liability period (as described on page I-5, December 30, 1983 submittal) to determine if adequate revegetation is being accomplished. This plan complies with the requirements of this section.

Stipulations

None.

UMC 817.131-.132 Cessation of Operations

Existing Environment and Applicant's Proposal

The applicant has committed to notify the DOGM and take appropriate action as required under these regulations, should operations at the plant be suspended (ACR Response, page 11).

Compliance

The applicant complies with these sections.

Stipulations

None.

UMC 817.133 Postmining Land-Use

Existing Environment and Applicant's Proposal

Map E9-3343 shows the current land uses of the permit and adjacent areas as industrial, grazing, and undeveloped land. Prior

to plant construction (1958), those lands now occupied by the coal cleaning plant, the railroad system and the refuse disposal area were undeveloped lands. Other areas of the permit were used for limited grazing.

Productivity for the site is low due to soil types and poor availability of water. The riparian zone along the Price River (about 39 acres within the permit area) is the only high priority or critical wildlife habitat within the permit area. The operator intends to return all disturbed areas to an "undeveloped land" land use.

Compliance

The proposed post mine land use is compatible with local zoning and, with the land uses of the adjacent lands.

The revegetation plan (seed mix) was developed to provide cover and food for wildlife, and as such, will enhance the area for local wildlife populations. The revegetation plan will also provide a better quality of forage for any grazing that might occur. In fine, the reclamation plan will restore or enhance the pre-mine land uses, thus compliance with this section is achieved.

Stipulations

None.

UMC 817.150-.176 Roads

Existing Environment and Applicant's Proposal

There are several roads used in conjunction with the plant facilities. The plant access and heat dryer access roads are Class I and are paved for day to day travel. The plant access extends from the facilities gate to the plant with no appreciable grade (cross-sections on Map C9-1286) and drains into the vegetative filter northeast of the plant. The heat dryer access road accessing the topsoil access road is part of the plant facility and parking pavement complex.

The nonpaved roads (i.e., clear water pipeline access, refuse pile access, material storage yard access, powerline access, upper refuse pond access, topsoil stockpile access and Sauerman tail tower access) are Class II roads used for intermittent travel. These roads were all built with existing construction techniques at the time of construction in the late 1950's, early 60's and are all in good condition evident from subsequent field inspections by the regulatory authority. These roads either drain into the vegetative filter or in the refuse ponds.

No relocation of any of the roads is planned. Maximum grade of any unpaved road is 9.8 percent on the upper refuse pond access road. This road drains directly into the upper and lower refuse ponds.

The county road, which remains unnamed or numbered, bisects the permit area between the refuse ponds and the Price River and is maintained by Carbon County.

Fugitive dust is controlled on roads by limiting speed and restricting traffic. If dust becomes a problem, the applicant will either sprinkle or chemically stabilize (page 748-48 of ACR Response). All roads will be reclaimed with the approved plan except the county road. Road reference drawings: F9-177, Sheets 1 and 2, C9-1286, A9-1432 and E9-3426 in Technical Revision #1.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.180 Other Transportation Facilities

Existing Environment and Applicant's Proposal

The plant railroad tracks are designed and engineered structures consistent with the permanent Rio Grande railroad tracks which run through the permit area. The plant railroad tracks will be dismantled and the area reclaimed upon final abandonment.

Culverts and bridges were engineered to design specifications at the time of construction in 1957-58 and were designed to safely pass a large storm event by regulatory guidelines at the time of construction. Field inspections show these structures are in good to excellent condition and are consistent with current regulations.

The plant bridge will be left after reclamation to provide access to monitor reclamation on the west side of the Price River.

The slurry pipeline from the plant to the refuse ponds is above ground and spans the Price River. It is an engineered line on steel supports. The pipeline is critically maintained due to its economic importance and is design welded over the Price River to prevent rupture and subsequent drainage into the river. The pipeline will be removed upon reclamation. There are five conveyors within the plant area: the raw coal conveyor; dry coal conveyor; coarse refuse

conveyor; clean coal conveyor; and, the wet coal conveyor. All conveyors are enclosed to prevent dust and assure economical operation. They will all be dismantled upon reclamation.

The prevention of damage to fish, wildlife and related environmental values is discussed in Section UMC 817.97 of the TA. The further diminution or degradation of water quality, prevention of additional suspended solids, erosion and siltation is discussed in Section UMC 817.41-.49 of the TA.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.181 Support Facilities and Utility Installations

Existing Environment and Applicant's Proposal

The central facilities are shown on Maps F9-177, E9-3341, Exhibits 1, 2, 3 and 4 and Map C9-1285. The buildings and facilities are all engineered structures which rest on concrete floorings. Blueprints are available upon request. Field inspection by the regulatory authority verifies that the buildings are in good condition and are consistent with State regulations since their construction in 1957-58. Upon reclamation, the buildings will be dismantled and disposed of and the area reclaimed in line with the approved postmine land-use.

Power is supplied and maintained by Utah Power & Light Company. Power enters the permit area from the north along the railroad right-of-way (shown on Map F9-177, E9-3341).

The discussion of prevention of damage to fish, wildlife and other environmental values is discussed in Section UMC 817.97 of the TA. The discussion of prevention of additional contributions of suspended solids to streamflow or runoff outside the permit area is found in Section UMC 817.41-.49 of the TA.

Compliance

Applicant complies with this section.

Stipulations

None.